The Journal

of the

Louisiana State Medical Society

$4.00 Per Annum, 35c Per Copy
Vol. 112, No. 11

NOVEMBER, 1960

Published Monthly
1430 Tulane Avenue, New Orleans 12, La.

The Clinical Pharmacology of Diuretics And Their Use in Clinical Medicine*

• The author discusses in detail the various diuretics and their individual attributes.

ROBERT SELLER, M. D.
ALBERT N. BREST, M. D.
JOHN H. MOYER, M. D.
Philadelphia, Pa.

Introduction

THE treatment of the edematous patient is one of the commonest problems encountered in clinical medicine; it is also one of the most challenging. Whenever possible, treatment should be directed at the specific pathophysiologic defect, but often the latter is not amenable to direct therapy. Treatment must then be directed at the secondary defect, i.e. abnormal retention of salt and water. The diuretic drugs presently offer the most effective means of controlling excessive fluid and electrolyte accumulation.

The clinical conditions associated with edema formation can be divided into five major categories. Cardiac edema, or congestive heart failure, is the most common. Less frequent causes of edema include renal disease, e.g. nephrotic syndrome and glomerulonephritis; premenstrual edema and the edema of pregnancy; hepatic disorders, e.g. cirrhosis; and iatrogenic, e.g. steroid-induced edema. Additional clinical problems include the mechanical edema secondary to venous or lymphatic obstruction and nutritional edema due to hypoalbuminemia and vitamin deficiencies.

There is currently available a wide spectrum of diuretic drugs with varying pharmacologic mechanisms. The proper selection of the most effective preparation depends upon a thorough understanding of the disturbed pathologic physiology and an intimate knowledge of the individual attributes of the various diuretic agents. The present report reviews the clinical pharmacology and therapeutic indications for diuretic therapy.

Clinical Pharmacology

Organomercurials. Despite the introduction of numerous newer agents, parenterally administered organomercurials remain among the most potent and consistently reliable diuretic compounds. These drugs probably inhibit sulfhydryl

---

* Presented by Dr. John H. Moyer at the Eightieth Annual Meeting of the Louisiana State Medical Society, May 3, 1960, in Baton Rouge.

Hypertension-Renal Unit, Hahnemann Medical College and Hospital, Philadelphia, Pennsylvania.

containing enzymes which, in turn, regulate the tubular reabsorption of sodium and chloride ions. Controversy exists as to whether the mercurials primarily inhibit sodium or chloride reabsorption.[1] Regardless of the primary mechanism, however, the urinary loss of these ions results in an accompanying water diuresis.

The glomerular filtration rate may rise, fall, or show no change during mercurial diuresis. Changes in renal plasma flow show a similar inconsistency. It therefore seems probable that these functions are not significantly involved in the diuretic effectiveness of these compounds. The effect of mercurial diuresis on potassium excretion is variable; however unless there is a massive diuresis, potassium excretion is not significantly enhanced (see Figure 1).

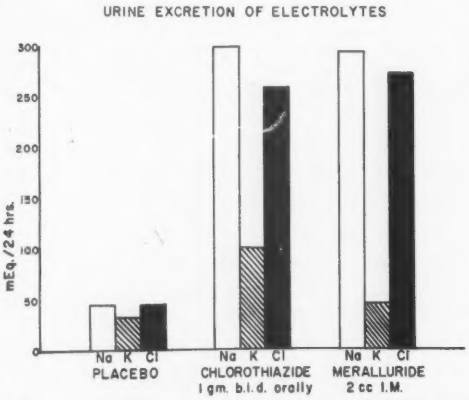

Figure 1. When meralluride is administered parenterally, the primary effect is an increase in sodium and chloride excretion with a minimal effect on potassium excretion. When chlorothiazide is administered the primary effect is also on sodium and chloride excretion but there is also a significant increase in potassium excretion. (Moyer and Fuchs, Am. J. Cardiol., 4:786, 1959.)

Mercurial absorption following subcutaneous and intramuscular injection is essentially complete within twenty-four hours in patients with minimal edema. The subsequent natriuresis parallels the urinary excretion of the mercurial. Generally, thirty percent or more of a parenterally administered mercurial is excreted in less than six hours. In patients with severe congestive failure, mercurial excretion following subcutaneous or intramuscular administration is somewhat delayed due to the poor circulation.

The oral mercurials are also effective diuretic agents when used in the higher dose ranges although gastrointestinal disturbances are prominent limiting factors. The most useful oral preparation is chlormerodrin (Neohydrin). The latter compound not only is better absorbed from the intestinal tract (up to 15 per cent) but is also several times more potent than other currently employed oral mercurials. During recent years, however, the oral compounds have been largely replaced by the thiazide derivatives which possess greater therapeutic potency and a lesser incidence of accompanying side reactions (see Figure 2).

Benzothiadiazine Derivatives. The precise mode of action of the thiazide diuretics has not been determined.[2] Most likely their major effort is related to the inhibition of sodium and chloride reabsorption at the tubular level. Although these com-

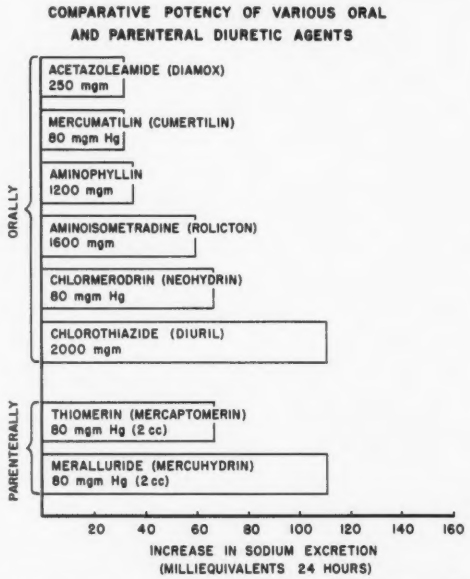

Figure 2. Chlorothiazide administered orally is of the same order of potency as meralluride administered parenterally. Both of these agents are more potent than acetazolamide and chlormerodrin given orally and mercaptomerin given parenterally. (Moyer and Fuchs, Am. J. Cardiol., 4:786, 1959).

pounds are known to be carbonic anhydrase inhibitors in vitro and also at high dosage in vivo, this latter action does not appear to be their primary mechanism.

The thiazides are rapidly absorbed from the gastrointestinal tract and sodium excretion begins within two hours after oral administration. Diuretic activity subsequently persists for approximately twelve hours. With effective diuretic doses of chlorothiazide, the increased rate of sodium excretion is nearly balanced by increased chloride loss; however potassium and bicarbonate excretion is much less intense. During diuresis caused by chlorothiazide, there is no significant change in glomerular filtration rate or renal plasma flow.

In human bioassay studies with oral chlorothiazide, there is an increased diuretic response in dosages up to 2 grams. When the potency of chlorothiazide is compared with the mercurials, 2 cc. of meralluride given parenterally produces an increase in sodium excretion which is somewhat greater than 2000 mg of chlorothiazide.[3]

The basic pharmacology of hydrochlorothiazide is quite similar to that of the parent compound.[4] The onset of diuretic activity occurs after the first hour and reaches a maximum in three hours. As with chlorothiazide, the duration of activity is approximately six to twelve hours. At the maximum effective dose (200 mg.), potassium excretion is approximately one-half that of sodium but chloride excretion is considerably greater. The latter effect differs from the response obtained with chlorothiazide and also the mercurial diuretics in which the sodium and chloride excretions are more nearly equal or the sodium excretion exceeds the chloride loss.

Flumethiazide, which results from the structural replacement of a triflouromethyl group on the sixth carbon atom of chlorothiazide, possesses the same basic pharmacology as chlorothiazide.[5] The maximum effective dose of the two drugs is essentially the same (2000 mg), and their clinical effectiveness is similar. Hydroflumethiazide, which results from the hydrogenation of carbons 3 and 4 of flumethiazide, has a dose range and electrolyte excretion pattern similar to hydrochlorothiazide except for a somewhat lesser kaliuretic effect.[6] By further adding a 3-benzyl radical to hydroflumethiazide, an additional increase in natriuretic effectiveness is accomplished. With benzylhydroflumethiazide, effective sodium excretion is obtained with doses between 2.5 and 10 mg, which is a 200 to 1 ratio as compared with chlorothiazide and flumethiazide.[7]

These various benzothiadiazine derivatives have all proven to be effective diuretic agents. The sodium excreting effects at maximum dose levels and the weight-loss response in heart failure patients are similar with each of the drugs even though the total number of milligrams has been markedly reduced with the newer derivatives.

Xanthine and Isocytosine Derivatives. Xanthine derivatives, such as aminophylline and various salts of theobromine, are derivatives of purine which is found in nucleic acid. Aminometradine (Mictine) and aminoisometradine (Rolicton) are more recently introduced oral diuretics. The latter compounds are derivatives of the pyrimidine base cytosine which also is found in nucleic acid.

The diuresis produced by the xanthine diuretics appears due primarily to a direct tubular effect.[8] Aminophylline inhibits those enzyme systems in the renal tubule necessary for reabsorption of sodium and chloride and a secondary increase in water excretion results. The latter action appears to be the most prominent effect of the xanthines, although they also have a stimulant action on the myocardium resulting in increased glomerular filtration and renal blood flow. The isocytosines have effects on renal transport mechanisms similar to those of the xanthine diuretics. In addition, they also produce an occasional moderate increase in renal plasma flow but glomerular filtration rates are not significantly altered.

The isocytosine drugs have proved to be effective oral diuretics, but their efficien-

cy is limited to the mild and moderate states of edema and they must be used intermittently to maintain maximum efficiency. The xanthines, especially aminophylline, are still in common usage but their potency is poor when compared with the mercurial diuretics. Nevertheless, they can be therapeutically useful since they frequently produce a significant potentiation of natriuresis when used in combination with other diuretic agents.

. **Carbonic Anhydrase Inhibitors.** The therapeutic use of oral carbonic anhydrase inhibitors has been most effective in the management of mild to moderate edema. Acetazolamide (Diamox) and ethoxzolamide (Cardrase) are currently the most widely used members of this group. Their diuretic response is secondary to carbonic anhydrase inhibition; the latter effect blocks the exchange of hydrogen ions for sodium in the cells of the renal tubules and, in addition, bicarbonate loss and metabolic acidosis ensue. When given orally, these drugs have no significant effect on glomerular filtration or renal blood flow.[9]

The carbonic anhydrase inhibitors lose their natriuretic effect in three to four days, and therefore, cannot be administered continuously. When used in the treatment of heart failure, acetazolamide and ethoxzolamide should be given for two or three successive days, allowing at least two days between subsequent drug courses. Another method is to give the drug as a single dose every other day. Acidosis due to renal failure must be considered a definite contraindication to the use of carbonic anhydrase inhibitors.

Spirolactones. Increased aldosterone secretion is generally present in the various edema states. Although the responsible mechanism(s) has not been precisely defined, it appears likely that the initial stimulus for enhanced aldosterone secretion is reduced plasma volume. Aldosterone excess, in turn, increases tubular reabsorption of sodium and enhances potassium excretion.

Spironolactone (Aldactone) is a steroidal spirolactone which possesses the ability to antagonize the electrolyte effects of aldosterone. The drug apparently acts competitively with aldosterone at the renal tubular level where it depresses the transport mechanism responsible for the reabsorption of sodium and secretion of potassium.[10] Spironolactone has been found to augment the diuretic effects of other agents including the mercurials and the thiazide derivatives. It is significant, however, that the drug is effective only in the presence of aldosteronism.

The Clinical Use of Diuretics

Successful management of the various edema states requires a thorough knowledge of the basic pathophysiologic mechanisms involved. Treatment should be directed primarily at the underlying physiologic disturbance, and diuretic therapy should be considered only as an additional clinical tool to be used in support of the basic therapeutic regimen.

Cardiac Edema. It appears likely that several mechanisms are responsible for salt and water retention in the patient with cardiac failure. Decreased renal blood flow and glomerular filtration are followed by diminished sodium and water excretion. Depressed arterial blood flow with increased venous pressure of the liver impairs the inactivation of the mineralocorticoids and aldosteronism ensues. In addition, the hyperosmolarity produced by electrolyte retention results in increased antidiuretic hormone (ADH) secretion and further water retention results.

The basic objectives of treatment are improvement of myocardial function and reduction of salt and water retention. These objectives are best achieved with digitalis therapy and the control of complicating factors such as hypertension. Reduction in physical activity is also helpful since exercise reduces glomerular filtration and thereby enhances electrolyte and fluid accumulation. Restriction of sodium intake is an additional therapeutic aid.

Diuretics can be administered as follows:

1. In severe heart failure, 2 cc. of a

parenteral mercurial, e.g., meralluride (Mercuhydrin), is given daily for three to five days until edema has disappeared.

2. After decompensation has improved, chlorothiazide (or an equivalent dosage of one of the other thiazide derivatives) may be administered in a dose of 1000 mg. every twelve hours. Subsequently, a maintenance dose of 500 to 1000 mg. of chlorothiazide will generally be adequate.

3. Less severe failure can often be controlled with acetazolamide (250 mg.) or ethoxzolamide (250 mg.) or aminoisometradine (600 to 1200 mg.) given daily for three consecutive days of each week. Oral mercurial diuretics such as chlormerodrin (Neohydrin), five to eight tablets daily, can also be used.

Renal Edema. Edema of renal origin is most commonly secondary to glomerulonephritis or the nephrotic syndrome. In the former instance, decreased glomerular filtration and renal blood flow result in diminished sodium excretion; in addition, increased vascular permeability is an important contributing factor. The treatment of the nephritic patient initially consists of bed rest, sodium restriction, and diuretic therapy. The thiazide derivatives, e.g. chlorothiazide (500 to 1000 mg. b.i.d.), are particularly useful. Acute glomerulonephritis unresponsive to conservative management may require adrenal cortical steroid therapy.

In the nephrotic syndrome, not only is there decreased glomerular filtration and renal blood flow but marked proteinuria exists as well. Edema production is enhanced by the presence of hypoalbuminemia and the consequent reduction in plasma colloid osmotic pressure. Management of the nephrotic consists of bed rest, sodium deprivation, and diuretic stimulation preferably with the thiazide derivatives. However, if the latter measures do not adequately control the edema, a trial with ACTH or steroid therapy is in order. In addition, if edema is severe, parenteral mercurials may be used with some success without real danger of toxicity from the drug. If there is no response to the aforementioned regimens, salt-poor albumin (100 gm., intravenously, every other day) or spirolactones (100 mg. q.i.d. of Aldactone) may be tried.

Premenstrual Edema and Edema of Pregnancy. The cause of premenstrual edema has not been precisely defined. However, the hormonal events of the premenstrual period probably influence the renal tubule directly or indirectly with consequent increased reabsorption of water and sodium. Premenstrual edema can usually be controlled with sodium restriction and oral diuretics administered during the last five to seven days of the menstrual cycle. Chlorothiazide in a dose of 500 mg. twice daily or acetazolamide (250 mg.) or ethoxzolamide (125 mg.) daily is usually adequate.

Edema of pregnancy may occur incidental to a pre-existing disease such as glomerulonephritis, or it may be a manifestation of toxemia of pregnancy. Whatever the interrelated factors in edema of pregnancy, the common denominator is increased tubular reabsorption of sodium and water. Since pre-existent disease may be responsible for edema in this entity, a thorough medical survey must be completed. The use of a low sodium diet plus thiazide derivatives or carbonic anhydrase inhibitors will generally control the abnormal fluid retention encountered in toxemia of pregnancy.

Hepatic Edema. Multiple factors account for edema and ascites formation in hepatic disease. Decreased inactivation of aldosterone and diminished osmotic gradient due to disordered protein formation promote excess sodium and water accumulation. In addition, portal hypertension and venous outflow block also contribute to fluid retention. Treatment of hepatic edema initially consists of adequate dietary control, bed rest, and diuretic therapy. Restriction of sodium is essential. In addition, a high protein intake to aid in positive nitrogen balance and protein synthesis is beneficial unless ammonia intoxication becomes clinically significant. Bed rest is also helpful since hepatic blood flow is greater in the supine position and

the demands upon hepatic metabolism are reduced.

Diuretic therapy can also be effectively utilized. Parenteral meralluride (Mercuhydrin), 2 cc. daily, will frequently produce marked natriuresis and diuresis. Dry weight may subsequently be maintained with 500 to 1000 mg. of chlorothiazide given daily. Occasionally the simultaneous use of mercurial diuretics and thiazide derivatives is more effective than either agent used alone. In refractory cases, the therapeutic combination of thiazide diuretics with adrenal cortical steroids or spironolactone may occasionally be helpful.

Iatrogenic Edema. Edema as a result of the chronic therapeutic administration of adrenal cortical steroids is becoming an increasingly common clinical problem. Although the edema can be controlled by discontinuation of steroid therapy, it is frequently not feasible to do so. In the latter instances, sodium restriction plus diuretic therapy will generally control edema formation. Thiazide derivatives (e.g. 500 mg. to 1000 mg. of chlorothiazide twice daily) used alone or in combination with mercurials are usually adequate.

References

1. Weston, R. E.: The Mode and Mechanism of Mercurial Diuresis in Normal Subjects and Edematous Cardiac Patients. Ann. New York Acad. Sci., 65:576, 1958.
2. Beyer, K. H.: The Mechanism of Action of Chlorothiazide. Ann. New York Acad. Sci., 71:363, 1958.
3. Ford , R. V., Moyer, J. H., and Spurr, C. L.: Clinical and Laboratory Observations on Chlorothiazide (Diuril). Arch. Int. Med., 100:582, 1957.
4. Moyer, J. H., Fuchs, M., Irie, S., Hernandos, S.: A Review of the Pharmacology and Clinical Observations of Hydrochlorothiazide. Arch. Int. Med., 105:39, 1960.
5. Bodi, T., Fuchs, M., Irie, S., and Moyer, J. H.: Further Observations on Flumethiazide. A New Oral Diuretic. Am. J. Cardiol., 4:464, 1959.
6. Mallin, S., Fuchs, M., Irie, S., Moyer, J. H., Newman, B. E., and Lippmann, E.: Hydroflumethiazide, A New Oral Diuretic and Review of the Benzothiadiazines. Geriatrics, 15:373, 1960.
7. Fuchs, M., Moyer, J. H., and Newman, B. E.: Clinical Evaluation of Benzydroflumethiazide (Naturetin). A Preliminary Report. Monographs on Therapy, 5:55, 1960.
8. Mudge, J. H. and Winer, I. M.: The Mechanism of Mercurial and Xanthine Diuretics. Ann. New York Acad. Sci., 74:344, 1958.
9. Ford, R., Spurr, C., and Moyer, J. H.: The Problem of Bioassay and Comparative Potency of Diuretics. II. Carbonic Anhydrase Inhibitors As Oral Diuretics. Circulation, 16:394, 1957.
10. Friedberg, C. K.: Clinical Pharmacology and Therapeutic Use of Spirolactones, Antialdosterone Agents. Edema: Mechanisms and Management. P. 316, W. B. Saunders Co., Philadelphia, 1960.

Editorial Letter
A Word of Explanation to My Professional Friends

My confreres in medicine have hitherto accorded me a degree of confidence and support at all times gratifying although it may be that they were occasionally in excess of my desserts.

It therefore seems to me proper to explain to those who are non-residents of this city why it has occurred that the daily press here has for some months been delighted to fill its columns with uncomplimentary strictures upon my efforts to discharge the very important duties of my position as a member of the National Board of Health. I should, in the first place, remark that these duties related to the whole country—not to New Orleans alone. It consequently resulted that the selfishness and short sighted policy of a majority of the members of the State Board of Health caused them to assume the attitude of declared enemies of myself, indeed, of all persons who took in consideration any interests except those comprised in their contracted view.

* * *

But amid all this defilement of our temples by the daily papers at the instigation of ignoble brethern, occurrences which have perplexed me greatly have been the statements of physicians that cases which in 1878 they would have called yellow fever, are not yellow fever in 1880. When a physician tells me he has just treated a fever of one paroxysm with black vomit, suppression of urine and body turning yellow after death, and that in 1878 it would have been yellow fever but in 1880 it is hemorrhagic malarial fever, my fingers must go into the nail wounds before I agree that the Great Master is again on earth and speaks.

S. M. BEMISS, M. D.

New Orleans M. & S. J. 8:476 (November) 1880

Surgery in the Prevention of Abortion*

• The authors review many factors which cause abortion and discuss the relatively uncommon cases in which surgery is indicated. Careful selection of these cases is emphasized.

H. D. WEBSTER, M. D.†
DAN W. BEACHAM, M. D.†
WOODARD D. BEACHAM, M. D.†
New Orleans

INASMUCH as there has recently been an increase in the number of operations done on the uterus to prevent loss of pregnancy, it is timely to present a discussion of these operations and their proper place in the avoidance of the expulsion of the products of conception before the fetus is sufficiently mature to survive.

In considering the need for these operations it is well to review the multiple factors involved in the causes of abortion and the frequency of occurrence of various types of terminations of pregnancies. Javert[3] gives the classification in Table 1:

TABLE 1
CLASSIFICATION OF INFANTS AND TYPES OF DELIVERY BY BIRTH WEIGHT AND DURATION OF GESTATION *

Type of Delivery	Weight in Grams	Gestation in Weeks
Abortion	0-500	0-22
Immature	501-1,500	22-30
Premature	1,501-2,500	30-36

* By permission from **Spontaneous and Habitual Abortion**, by Carl T. Javert, M. D., Copyright 1957. McGraw-Hill Book Company, Inc.

He found that of 30,788 pregnancies, 8.3 per cent were spontaneously aborted, 1.2 per cent terminated as immature deliveries and 4.7 per cent terminated as premature deliveries. Of the ovofetuses of less than 500 grams, 35 per cent were malformed and 42.8 per cent were degenerated or macerated. Only 22 per cent were living and completely normal. Appropriate therapy may have salvaged this small group. These figures are quoted to emphasize that early abortions are usually due to faulty fetal development and cannot be prevented by uterine operations.

Time does not allow a thorough presentation of the etiology of pregnancy loss. The various established factors are decidual hemorrhage, malformed fetus, endometrial polyps, tuberculosis of the endometrium, intra-uterine trauma, separation of the placenta, cervical implantation, rupture of the membranes, amnionitis, hydatidiform degeneration, vascular anomalies of the umbilical cord; knots, looping or twisting of the cord; infarction of the placenta, multiple gestation, syphilis, maternal viral infections, chronic vascular diseases, disseminated lupus erythematosus, peritonitis, operations on the uterus, therapeutic pelvic irradiation, malnutrition, marked emotional disturbances, incarceration of the uterus, uterine malformation, cervical incompetency and uterine myomas. The last four factors are intrinsic to the uterus and will be considered in this presentation. The likelihood of any of the other factors being involved must be carefully considered when deciding as to the advisability of surgery.

Incarceration of a retroplaced uterus below the sacral promontory can usually be reduced by having the patient assume the knee-chest position, crawl, or "stand on her head" with assistance. Adhesions of infectious or endometriotic origin which "fix" the uterus in the cul-de-sac usually preclude conception, consequently, operations to release adhesions are very rarely needed.

* Presented at the Eightieth Annual Meeting of the Louisiana State Medical Society, in Baton Rouge, May 4, 1960.

† From the Department of Obstetrics and Gynecology, Tulane University School of Medicine, New Orleans.

Uterine Myomas

The role of myomas in infertility is difficult to evaluate, although statistically there is a definite correlation. When myomas are found associated with pregnancy, experience has shown that usually no treatment is needed. If carneous (red) degeneration occurs, rest and analgesics are indicated. Myomectomy should be used only for persistent pain or evidences of intra-abdominal bleeding. Torsion of pedunculated subserous myomas usually causes severe pain and requires early operation.

If repeated abortion occurs in a myomatous uterus, myomectomy is in order. In searching for the causative factors in repeated abortions, hysterosalpingography using a radiopaque solution followed by contrast films with carbon dioxide in the uterine cavity should be done to visualize submucous myomas. Myomectomy is very infrequently necessary in habitual aborters as exemplified by the fact that Javert performed only three myomectomies in 100 such patients and Mann reported that myomas were not incriminated in any of 160 cases.

Uterine Anomalies

The role of malformed uteri in pregnancy loss has long been recognized. Improvement in surgical care, particularly the avoidance of infection, has justified the more frequent repair of septate and bicornuate uteri when repeated abortion has occurred.

In habitual abortions malformations of the uterus have been found in 1 to 2 per cent. Recognition has been made by intrauterine palpation at the time of abortion or by hysterography while non-pregnant. Studies have shown that patients with complete duplication of the uterus are not prone to obstetric failure and that bicornuate or septate uteri, although subject to abortion or premature labor, may carry infants to maturity. The decision to operate for correction of a misshapen uterus is best based on the reproductive experience of the patient. In a series of 65 patients operated upon, Jones et al,[4, 5] reported that three-fourths had a successful pregnancy.

For example, a 24-year-old quintigravida was found to have a bicornuate uterus following her fourth consecutive mid-trimester abortion. Her first pregnancy terminated at twenty-eight weeks with the delivery of a surviving infant. Hysterosalpingograms obtained after her last abortion revealed the uterine anomaly but excretion urograms were normal. Seventeen months after a modified Strassmann operation by Dr. Jack Kushner, a full term, normal baby was delivered by cesarean.

Incompetency of the Cervix

During recent years the entity of cervical incompetence has been recognized. Most commonly it has been found following delivery or dilation and currettage with injury of the upper cervix. Primary incompetence of the internal os is thought to exist by some investigators.

In a study of 160 habitual aborters, Mann [7] reported 13 patients with cervical incompetency. Barter et al,[2] found 22 cases during the time that 35,000 deliveries were managed. The occurrence of gradual dilation and effacement of the cervix without unusual contractions from fourteen to twenty-eight weeks gestation is expected to occur with this condition. Bulging membranes may be found. If the patient has not been examined to determine the gradual painless cervical dilation, the first finding is apt to be rupture of the membranes. Loss of the pregnancy soon follows.

When this condition is detected during pregnancy prior to rupture of the membranes, the cervix may be closed by a constricting band placed around the cervix (Shirodkar operation). Before performing this procedure it is well to observe the patient for forty-eight hours at bedrest in order to be certain the membranes are intact and that no other cause for termination of the pregnancy exists (placental separation, fetal anomaly, et cetera).

Cervical incompetency can be suspected in the non-pregnant woman with a history of one or more episodes of pregnancy loss

as described above. Demonstration of a patulous upper cervix by the passage of a number 10 dilator without resistance indicates the condition and at times an area of previous injury can be localized by careful palpation with the dilator in place. Hysterosalpingography as used to determine tubal patency does not demonstrate cervical incompetence. Special balloon techniques have been devised. When this condition has been properly diagnosed by objective findings in addition to the history in the non-pregnant patient, cervical repair can be performed as described by Lash.[6]

We are indebted to Dr. Fred O. Brumfield for the following data regarding a patient whose first pregnancy terminated in 1952 with the spontaneous delivery of a normal 7 lb. 15 oz. baby. In 1954 she had a D. & C. for intermenstrual bleeding. During the following year, at the eighteenth week of her second gestation, the cervix was found to be approximately 4 cm. dilated and the amniotic sac was presenting in the vagina although there was no history of uterine contractions. Pregnancy loss resulted. Hormonal therapy and bedrest were unsuccessful in the management of her third pregnancy which ended similarly at the nineteenth week. Subsequent examination revealed a cervical os that easily admitted a number 10 Hegar dilator. On April 2, 1956, a Lash procedure was performed. She was delivered vaginally at term of a 6 lb. 7 oz. girl in April of the following year. Postpartum examination revealed competency of the internal cervical os.

When the patient is pregnant and the condition is anticipated by history, Barter[1] advocates performing the Shirodkar operation at fourteen weeks gestation. Others may choose to wait until cervical dilation is beginning.

The following case is an example:

L. A. P., a 23-year-old gravida IV, para II, aborta I, was seen February 4, 1959 approximately six weeks pregnant with an E.D.D. of September 27, 1959. Past history revealed her first pregnancy ended in premature delivery at seven months of a 4 lb. 6 oz. female who lived. This was followed by a spontaneous abortion at two months. Her third pregnancy ended in premature labor at seven months with delivery of a 4 lb. 6 oz. male who failed to survive.

She was followed in early pregnancy by frequent vaginal examinations until twenty-eight weeks gestation at which time the cervix was found to be dilated approximately 2 cm. Cervical ligation was performed, using Mersilene according to the technique of Barter. The oral administration of Provera was continued postoperatively. Her course was uneventful until September 7, 1959, when labor spontaneously ensued nine weeks after operation. A low transverse cesarean was done with the delivery of a 6 lb. female in excellent condition.

Complications

The complications inherent in the Lash procedure are failure of adequate healing after repair, due to infection, and rupture of the uterus in the scarred area during pregnancy. Lash[6] found that of 47 patients 31 were delivered vaginally and 16 by section.

Following the Shirodkar procedure slough and extrusion of the non-absorbent material may occur. Increased contractions of the uterus or rupture of the membranes may require removal of the cervical "constrictor." Rupture of the uterus may occur due to strong contractions with an obstructed cervix.

Postoperative bleeding has been reported after both procedures. Various complications of pregnancy non-inherent in the operations may cause loss of the infant.

Conclusions

1. In evaluating the place of surgery in the prevention of abortion, all the factors causing abortion must be considered. Those cases amenable to surgical correction are relatively uncommon and should be carefully selected.

2. Myomas are seldom the cause of pregnancy loss. Myomectomy during pregnancy is rarely needed and myomectomy

to avoid repeat abortion is even more rarely justifiable.

3. In all cases of habitual abortion or premature delivery, the uterine cavity should be examined carefully following expulsion of the placenta.

4. Septate and bicornuate uteri should be surgically corrected when repeated pregnancy loss from no other discernible case has occurred.

5. Cervical incompetency is a definite clinical entity, which can be accurately diagnosed by objective findings in the non-pregnant patient with a typical history.

6. Correction of cervical incompetency can be done by the Lash operation prior to pregnancy or by the Shirodkar operation during pregnancy with anticipation of successful pregnancy resulting in 80 per cent or more.

References

1. Barter, R. H.: Operations to Preserve Pregnancy, Clin. Obst. & Gynec. 1:963, 1958.

2. Barter, R. H., Dusbakek, J. A., Riva, H. L., and Parks, J.: Surgical Closure of the Incompetent Cervix During Pregnancy, Am. J. Obst. & Gynec. 75:511, 1958.

3. Javert, C. T.: Spontaneous and Habitual Abortion, New York, McGraw-Hill, 1957.

4. Jones, H. W., Jr.: Operation For Congenital Anomalies of the Uterus and Vagina, Clin. Obst. & Gynec. 2:1053, 1959.

5. Jones, H. W., Jr., Delfs, E., and Jones, G. E. S.: Reproductive Difficulties in Double Uterus, Am. J. Obst. & Gynec. 72:865, 1956.

6. Lash, A. F.: Operations for Habitual Abortion, Clin. Obst. & Gynec. 2:1083, 1959.

7. Mann, E. C.: Habitual Abortion, Am. J. Obst. & Gynec. 77:706, 1959.

Discussion

Dr. Joseph A. Farris (Baton Rouge): I wish to commend Doctors Beacham and Webster on a well written paper.

As you know, Lash and Lash presented their first paper on the incompetent cervix in 1950, which procedure involved a wedge resection of lower segment. In a series published in 1957, Lash had done 68 wedge resections, 41 of their patients became pregnant and 34 delivered viable babies.

Shirodkar recommends the use of homologous fascia, thus creating no scar in the lower uterine segment, thus making possible vaginal delivery.

McDonald recommends the use of polyethylene tubing, through which tantalum has been inserted at level of internal cervical os. Two strands are used.

The following criteria have to be met before surgery: (1) It must be done prior to pregnancy or before the 24th week of pregnancy; (2) It should not be done in the presence of bleeding, ruptured membranes, tumors or fetal death, and (3) The patient should particularly be watched when using the polyethylene tubing for threatened abortion or premature labor.

I do know of two cases which have had this procedure done, one is 7½ months and the other is 3 months. Both of these have had 6 previous abortions.

I agree with the authors that myomectomy is seldom indicated as it rarely interferes with conception.

University-State Affiliated Mental Health Training and Research in a State Hospital*

• Many benefits have accrued to the hospital for mental diseases and to the patients from the program instituted which provides for the training of personnel.

R. WELLS BUDDINGTON, M. D.
New Orleans
WINBORN E. DAVIS
Baton Rouge
FRANCISCO SILVA, M. D.
Jackson

SOMETIME in the not too distant future, the year 1956 will be recognized as a singularly important date in the promotion of mental health in Louisiana. It was then that the State Legislature enacted measures which authorized the State Department of Hospitals to develop a far reaching program for training personnel to staff mental hospitals, mental health clinics and guidance centers. The program was designed to deal with the problem of insufficient numbers of trained personnel, a problem that had been paramount since Louisiana first began a public program in mental health during 1948. For years hospitals and clinics had hoped that training institutions would provide qualified professional personnel in sufficient numbers to staff public mental health facilities. By 1956 it had become apparent that the institutions alone could not meet the increasing demands for trained personnel.

Act 480 of 1956

Act 480 of the 1956 Legislature was aimed at alleviating this problem by providing a continuing source of funds that did not depend on annual or biennial appropriations by the Legislature. It provided that all funds paid to state hospitals by or in behalf of patients who are able to pay for services should be placed in a Mental Health Research and Training Account to be administered by the State Department of Hospitals. The Act dedicated these funds "for the purpose of conducting research programs in problems relating to mental illness and to support programs of teaching and training physicians, psychologists, social workers and other professional workers engaged in the care and treatment of mentally ill." This made it possible to develop a mental health training program that could provide more and better trained personnel to staff Louisiana's mental health facilities. It was believed that this, in turn, would result in better patient care, shorter periods of hospital stay, greater numbers treated on an out-patient basis and the ultimate reduction of in-patient populations in mental hospitals. It was further believed this would mean a savings to the individual who becomes ill as he loses less time from productive employment, and a savings to the State in terms of total cost per patient.

In implementing Act 480 the State Department of Hospitals adopted a somewhat unique plan. The Department recognized that considerable teaching personnel and perhaps years of time were necessary to develop approved training programs in its own hospitals and clinics. Again it turned to educational institutions which already operated accredited training programs. Agreements were worked out

* Presented at the Eightieth Annual Meeting of the Louisiana State Medical Society, in Baton Rouge, May 3, 1960.

with the Louisiana State University and the Tulane University Schools of Medicine to set up *affiliated* resident training programs in psychiatry. Arrangements were made also with Tulane School of Social Work and L.S.U. School of Social Welfare to train additional psychiatric social workers, and with the L.S.U. Department of Psychology for the training of clinical psychologists.

Through these agreements the State Department provided funds for the schools to employ additional teaching personnel and to defray certain added costs of expanding their programs. This enabled the institutions to strengthen their training programs while turning out greater numbers of students. At the same time the State Department made available to the schools its own local facilities for placement of psychiatric trainees, psychology interns, social work students and psychiatric nurse students.

These funds are collected by the various State hospitals and deposited in the Mental Health Training and Research Account. During the fiscal 1956-57 while first funds were being collected, the Legislature appropriated $210,000.00 to get the program underway. Funds are collected during one fiscal year and expended during the following year. Collections to date are as follows:

1956-57	$336,988.00
1957-58	353,324.00
1958-59	477,079.00

It is believed that these figures will amount to more than five hundred thousand dollars per year as patients and families become accustomed to paying something toward hospital care and that these payments go toward providing better care for the mentally ill.

Selection and Education of Trainees

The schools are fully responsible for selection and education of trainees, who in turn are under complete jurisdiction of the schools during their period of training. Psychologists, social workers, and nurses may or may not receive a part of their training in a State facility. In the case of psychiatry, however, the first one and one-half years of training must be spent working with psychiatric in-patients at one of the State mental institutions. The other year and a half of training is spent in the out-patient facilities at either Tulane or L.S.U. Department of Psychiatry in New Orleans.

Stipends are available to mental health trainees who agree to work at least one or two years in State facilities upon completion of training. These stipends currently range from $2000 to $3600 per year for social workers, psychologists, nurses and music therapists. They may be awarded for one, two or three years. Psychiatry stipends are considerably more liberal and vary according to the training plan chosen. The four year career plan pays $5800 the first year, $6200 the second year, and $6600 the third year, while requiring at least one year employment afterward. The five year career plan pays $7200, $7800, and $8400 to trainees who agree to work at least two years after completion of training.

First trainees entered this program in September 1956, and at this writing the program is nearing the end of its fourth year of operation. Recruitment in psychiatry, psychiatric social work, and clinical psychology has been highly successful as evidenced by the figures in Table 1.

Of the 27 who have completed training, 26 are now employed in State mental health facilities, one worked a year and resigned. Of the seven who completed part of training, five are now employed, one worked a year and resigned and one is deceased. Some 20 of those presently training will complete their studies by July 1, 1960, and begin work. Recruitment continues to be sufficiently successful that the State Department anticipates an average of 25 to complete training each year and take their places in public mental health facilities.

Through this program Louisiana not only profits from more and better trained professional personnel to operate its mental health facilities, but also derives additional benefits from having training pro-

TABLE 1
NUMBER OF TRAINEES, JULY 1956 - FEBRUARY 1960

	Stipends Awarded	Completed Training	Completed Part of Training	Dropped	Now Training
Psychiatry	28	4	0	1	23
Neurology (Program started July 1959)	3	0	0	0	3
Psychiatric Social Work	37	12	2	3	20
Clinical Psychology	29	6	5	2	16
Psychiatric Nursing	4	3	0	0	1
Music Therapy	2	1	0	0	1
Clinical Pastoral Counselling	1	1	0	0	0
	104	27	7	6	64

grams operate in its local hospitals and clinics. This year psychiatrists are in training at all three State mental hospitals for the first time in history. Their presence is stimulating to staff at all levels and results in a higher quality of service to the patient. A most typical example is that of East Louisiana Hospital, Jackson, where six psychiatric trainees are currently in training. The remainder of this paper will deal with the affiliated program at Jackson as an example of what can happen when State and educational institutions collaborate in their efforts to solve a major health problem.

Program at East Louisiana State Hospital

The East Louisiana State Hospital was organized in 1845 and is Louisiana's oldest and largest State mental institution. It has a patient population of approximately 5000, with a staff in excess of 1100. For years the patient population in this hospital has been on the increase, averaging 2000 admissions per year. The hospital has been constantly expanding to accommodate more patients.

In fiscal 1956-57 there were more than 4800 patients cared for by eight physicians, only one of whom could be considered a qualified psychiatrist. Few of the modern therapies were used, and planned psychotherapy administered by trained therapists might be said to be non-existent. Tulane School of Medicine chose this institution in which to concentrate its affiliated psychiatric training and research programs.

In August 1957, the Acute Intensive Treatment Unit at East Louisiana was designated as the Training and Research Unit. Because of the tremendous size of this institution, this Unit was organized as a smaller hospital within the hospital. (It is interesting to note that this is exactly the procedure the largest state hospitals in California and in the East are following in an effort to introduce more dynamic care.) The Training and Research Unit was staffed at the beginning by one qualified psychiatrist who had the title of Director of Professional Education, one psychologist and one psychiatric trainee, plus an occupational therapist, nurses, and other supporting personnel. The unit was housed in a fairly modern building which was built to serve as an untidy ward, and a great number of physical changes had to be made in order to accommodate an Intensive Treatment Center. This building had four wards with a capacity of approximately 130 patients. Two of these wards were designated as Intensive Treatment wards while 2 others were selected as Research wards.

During the first year of operation, the Acute Intensive Treatment Service was functioning at half its capacity because of lack of staff and also because of the difficulties and mistakes that plague any new enterprise of this sort. Because of the low patient population at that time the cost of hospitalization per patient per day was in the neighborhood of $5.00 which was relatively high in comparison with costs for patients in the rest of the hospital (national average $4.50, V. A. Hospitals $11.00 per day per patient.) But this was fairly balanced because the aver-

age duration of hospitalization in the Training Unit was considerably shorter than in the remainder of the hospital.

Since 1957, the Training and Research Unit has been expanding continuously. At the present time, the Unit has a Staff of eight physicians, two of them trained psychiatrists and six resident trainees. (It is worth noting also that in the same period of time, the hospital has acquired two more fully-trained psychiatrists, products of the State training program—one being the Clinical Director of the hospital.) The psychology staff has increased also and at the present time, between full-time and part-time persons, four psychologists are working in the Unit. Next year in cooperation with Louisiana State University, Department of Psychology, the Unit plans to staff an internship program for psychologists. The number of graduate nurses has also doubled and in cooperation with the McNeese State College, Department of Nursing, the Unit is conducting a training program in psychiatry for student nurses. Also working at the Unit is a trained music therapist who is also a product of the training program of the State of Louisiana.

A look at the Hospital today reveals that this training program has provoked a great change in the hospital as a whole, and the Training and Research facilities have increased considerably. At the present time, the Unit has a capacity of over three hundred (300) beds, approximately one hundred fifty (150) of these beds are dedicated to the treatment of mentally ill people, one hundred fifty (150) are research beds and fifty (50) are neurology beds. In addition to the Acute Intensive Treatment wards in 1959, the Training and Research Unit, established and operated an admission service. At the present time, every white patient that is admitted to the East Louisiana State Hospital is screened in these admission wards. There, he receives necessary psychological, neurological and laboratory tests. A careful case history is compiled, diagnosis is made, and treatment is started. Later, according to the diagnosis and prognosis, the patients are transferred to various wards within the hospital.

The Acute Intensive Treatment wards are organized as an open-door hospital in which patients are encouraged to participate in the government of the wards. There is a patient government for each ward with officers elected by the patients, and there are weekly meetings between patients and the staff. In these meetings, the patients or their officers make suggestions as to how to improve the functioning of the wards and express any complaints that may have arisen. As a result of these meetings, great changes have occurred in the Acute Intensive Treatment wards. One thing, is that in many cases the patients themselves are in charge of the discipline in the wards.

In these wards, the patient receives what is called total push treatment. They participate in group or individual psychotherapy. They have drug therapy or electric shock therapy, if needed. There are also very active programs of occupational, recreational and music therapy. Patients are encouraged to wear their own clothes rather than drab hospital uniforms and an attempt is made to create as home-like an atmosphere as possible. Week - end passes are encouraged, when reasonable, in order that the patient can maintain contact with his family and friends. As a result of these activities, 84 per cent of the patients admitted to these wards now are dismissed from the hospital within seventy-two days after their admission. In the last few months, the Training and Research Unit alone has been sending home an average of 40 to 45 patients a month. This average period of hospitalization, two and a half months, compares very favorably with national statistics. As a result of increasing the bed facilities, the cost per patient per day has decreased considerably and it is now around $3.00 per day per patient making the total cost of hospitalization for each patient roughly $200.00.

These figures compare even more favorably with those of the Acute Intensive Treatment service prior to 1957 at which

time the Training and Research Program took over. While operated by the Hospital in fiscal 1956-57 the AIT Unit served less than 200 patients per year as compared to 311 patients in fiscal 1958-59. The average patient stay was one hundred and ninety-seven days (six and one-half months) in 1956-57 and only seventy-three days (two and one-half months) in 1958-59. Average per patient day cost in 1956-57 was $2.25, and had risen to $4.93 per day in 1958-59. However, total cost per patient stay had been reduced from $443.25 to $359.89 representing a saving of $83.36 per patient. To the economy of the program can be added the savings in human happiness when it is realized patients go home to their families and jobs some four months earlier than in 1956.

Let us turn now to the research aspects of the Training and Research Unit. The Research wards have collected a group of chronic schizophrenic patients who have been hospitalized for an average of fourteen years and who have received the usual type of somatic treatments without lasting improvement. This group of patients has been studied and followed carefully for more than two years. Complete physical, biochemical, psychological and social service data has been compiled for each of them. There is not, to our knowledge, any other group of chronic schizophrenic patients currently available for research which is as large, as well-studied or as thoroughly followed for a long period of time.

Since this Research ward was opened a great amount of research work has been done with regard to various biochemical aspects of schizophrenia. Many new drugs, some of which are not on the market yet and some that are just beginning to appear on the market, have been tested for a long period of time with these patients. It is the policy to cooperate with research workers from other institutions and several internationally-known research men (such as Dr. Woolley from the Rockefeller Institute and Dr. Altschule from Harvard University.) Recently, the NIMH granted the group of psychiatrists from Tulane University $75,000.00 per year for a period of five years to conduct research in mental illness in the Research wards of the Training Unit at the East Louisiana State Hospital.

In spite of the fact that this program was started just three years ago and the bulk of our trainees will not start to flow into our mental institutions and mental health clinics until next year, already the benefits of our State Training program can be seen. This training program, and in particular the Training and Research Unit, has changed East Louisiana State Hospital from a huge warehouse of mental patients to a place where dynamic and intensive treatment is conducted, a place where men and women are rehabilitated and quickly returned to society.

One hundred and twenty two years ago, Dr. William M. Awl, one of the founders of the American Psychiatric Association, concluded the first annual report of the Ohio Hospital for the Insane as follows: "The importance of remedial means in the first stages of insanity, cannot be too strongly impressed upon the public mind. That morbid excitement in the brain which accompanies the disease by long continuance, too often induces a change of structure incompatible with the future soundness of intellect, and renders the resources of medical science of little avail, except as palliatives. These facts are entitled to consideration, as indicating the proper course for arresting individual suffering. They are important also, in a pecuniary point of view. The sooner patients can be cured and discharged, the less expense to both friends and the public."

Today, at East Louisiana State Hospital, the staff has the thoughts of Dr. Awl very much in mind. They feel strongly that unless a patient is sent back to society as soon as possible, the chances for recovery diminish in direct proportion to the amount of time the patient stays in the hospital. Two things usually happen. In the first place, the hospital is a protective environment; the more the patient

becomes accustomed to it the more difficult it becomes for him to return to an active life in society. Secondly, the family of the patient becomes used to his being in the hospital, loses interest in him, and very soon feels the patient is a responsibility of the hospital and the State. This has been the case with many long-hospitalized patients that the Unit has been able to rehabilitate. They are ready to go, but the family refuses to take them back.

In the beginning of this paper it was said that East Louisiana State Hospital has been increasing in size because for years more patients were admitted than were discharged. This trend has finally changed, for in the last few months the Hospital has discharged more patients than were admitted. It is believed the Training Unit has something to do with this, not only because of the amount of patients who are rehabilitated every month, within the Unit itself, but also because of the new vitality that has been generated in the Hospital as a whole.

East Louisiana still has a long way to go. Its Intensive Treatment has been limited mainly to the white patients; now the Staff is beginning to extend services to the Colored wards and has established very successfully what could be called an embryo of the future colored male admission and Acute Intensive Treatment Unit. The Research and Training Unit, Tulane and the State Department of Hospitals are proud of this achievement. It has been proven that a large State mental institution can be changed from an atmosphere of custodial care to an orientation of dynamic and intensive treatment, and this never could have been achieved without an efficient training program. It is noted with satisfaction that some states (New York, Ohio) have arrived at the same conclusions. They are creating smaller training units within their large State mental institutions. They are creating a few research centers within these institutions, and are naming trained psychiatrists as Directors of Training and Research programs.

In the next few years when the bulk of trainees move into the State Hospital system, it is believed that the State of Louisiana will not take a back seat to any other in the treatment of mental illness.

References

Davis, Winborn E.: Louisiana's Mental Health Training Program. Louisiana Welfare, Vol. 17, No. 4, October, 1957.

Greenblat, Milton: From Custodial to Therapeutic Patient Care in Mental Hospitals. Russell Sage Foundation, 1955.

O'Neill, Frances J.: The Mental Hospital: Cornerstone for Community Psychiatric Services. The American Journal of Psychiatry, Vol. 116, No. 9, March, 1960.

Tallman, Frank F.: The State Mental Hospital in Transition. The American Journal of Psychiatry, Vol. 116, No. 9, March, 1960.

The American Public Health Association

The American Public Health Association will hold its eighth annual meeting in New Orleans, commencing Tuesday, December 7th, 1880, and ending Friday, December 10th, 1880.

Papers will be presented on Abbatoirs, Epidemics, Life Insurance in its relation to Public Health, The Storm-water question in City Sewerage, The Sanitary Engineering problems of the Mississippi River, The Hygiene of Emigrant Ships, The Prevention of Venereal Diseases, Voluntary Sanitary Associations, etc.

The special questions suggested for discussion at this meeting, in addition to those connected with the papers above referred to, relate to methods of preventing the spread within a town or city—after they have once been introduced—of such contagious or spreading diseases as diphtheria, scarlet fever, yellow fever, measles, small-pox, etc.

New Orleans M. & S. J. 8:487 (November) 1880

The Management of the Diabetic

• The author stresses the psychological management of diabetes, especially that of children, so that the diabetic is not the victim of fears which alter the whole outlook on life.

MANUEL GARDBERG, M. D.
New Orleans

THE literature of diabetes is replete with papers which offer detailed discussions of the metabolic disturbance in diabetes mellitus, of its dietary management, of the virtues of various kinds of insulin, of the criteria of control, and of the complications of this very common disorder. Almost every aspect of diabetes mellitus has received a great deal of attention from scientific and pseudoscientific investigators and almost every aspect of the disease is involved in controversy. But one almost general, if tacit, agreement in the literature of diabetes can be discerned—an agreement to neglect the fact that the patient is a human being, who is not deprived by the diabetes of his hopes, his fears, his family responsibilities, and his friends and neighbors.

Thus, most discussions involve only the care of the diabetes—as if it were a disturbance in a chemical factory whose raw materials are carbohydrates, proteins and fats, and whose principal finished product is an acrid yellow fluid which is produced surreptitiously as if it were contraband of great value, yet for which no market has yet been found. Indeed, the object of the management of the disorder seems to be simply to keep the factory working (certainly a commendable aim) and to keep the quality of the yellow fluid up to certain standards, presumably so that it will neither corrode the sewers by which it is discarded, nor attract ants.

However, the patient is not simply an aggregate of chemical processes and life is not simply a mater of chemistry and physics. The patient is a human being and life is a matter of feelings—of hopes and fears, of illusions and realizations. The disturbance that occurs in his feelings when a patient is told that he has an incurable disease such as diabetes mellitus is a matter of the first order of importance.

Threat to Life

All too often the physician is not aware of the patient's mental processes. Perhaps he should indulge in a bit of instrospection. Insofar as the business of daily living is concerned do we not live, think and feel as though we were immortal? Of course we say that we know we are going to die; we even write wills; but we do not really accept this fact fully, or rather, do we not, for the most part, relegate it to a future so remote that our consciousness of the possibility of its occurrence becomes negligible? With the sudden death of a contemporary we become depressed. Can we deny that it is because we are temporarily shorn of our comfortable delusion—that for the moment we have been forced to face the fact that we too may soon go? While we soon escape again into the delusion by dismissing the news of a friend's death from our minds, we have had for a moment a taste of what most patients feel when they are told that they have an incurable disease such as diabetes or heart disease. But the patient cannot so easily restore his morale. Every medication and every restriction that is placed upon him and everything that he hears from his friends constitutes an assault upon the happy delusion of immortality under which most people live and which, in the last analysis, is the core of that

* Presented at the Seventy-ninth Annual Meeting of the Louisiana State Medical Society, in New Orleans, May 6, 1959.

which we call morale. He feels that he has entered upon the beginning of the end.

Threat to Normalcy

Second in importance to this is the need that everyone has to be like other people—to be "normal"—to be able to do as other people do—not differently.

Frequently, the physician fails to anticipate these reactions in the patient's mind and fails to deal with them. If he thinks that they are not present simply because the patient does not mention them or ask questions about them then he has not yet learned that frequently they ask no questions because they are afraid of the answers. Much of what the patient feels when he is told that he has diabetes is based upon misinformation that he has acquired beforehand, some is based upon inferences that his imagination mistakenly draws from the directions that the physician gives him. Whatever misinformation he does not already possess is generously supplied by his family and friends. Here we encounter the general phenomenon that people talk the most about that of which they know the least, and more specifically about medicine, for everybody likes to play doctor. More recently this phenomenon has been greatly enhanced by the innumerable newspaper columns, magazine articles, television shows and radio programs which furnish it with an endless supply of ammunition. This ammunition is apparently under great pressure for with the slightest mention of a medical subject the lid is off, and a great cloud of misinformation pours forth.

Among the pearls of wisdom to which the diabetic is treated are the following: "They are always in imminent danger of going into diabetic coma; they are always in danger of going into insulin shock; they become impotent. If they have any children they too will be diabetics, and *their* children will be diabetics; if they suffer wounds, they will not heal". An entire volume would be required to list the notions that he encounters. In short, his life, his ability to work, his sexual prowess, everything—hangs by a thread.

It is the purpose of this paper to point out that the most important object of the treatment of the diabetic is to make it possible for the patient to live within himself and without (for the two are inseparable) as normal a life as possible.

Reassurance

Accordingly, one should begin by assuring the diabetic that while diabetes is incurable, it is entirely correctible, for, if necessary, insulin taken in proper doses supplies him with what he lacks. Thus with proper care of himself he is a normal man—with so nearly a normal life expectancy that it is hardly worth while calculating the difference. All of the misinformation to which he will be exposed must be anticipated—he must be educated to ignore it. He must be taught that he needs only to learn to do those things that he has to do to take care of his diabetes a matter of habit (like shaving and brushing his teeth) and he may then go about the matter of daily living as though he were going to live forever.

He must learn that he is *not* constantly in danger of coma and other complications of diabetes. Certainly it is possible to teach diabetics to take care of themselves without overwhelming them with all of the possible complications at the first visit. The positive aspects should be emphasized first. The things that he needs to learn about complications can be taught later when he is not upset and will not exaggerate their dangers. The measures employed to control the metabolic defect must be bent about the primary purpose of achieving a healthy adjustment individually for each patient. In general this implies that the simplest possible methods should be used. The diet should be prescribed in the simplest possible terms, the hypoglycemic agent employed should be administered in the least burdensome manner and the criteria of control should not be so exacting that they constitute a constant threat. The patient should be taught to take care of himself and should not have to see the physician frequently.

Control

Certainly, it is not necessary to enforce rigid metabolic control immediately if at all. Emphasis should first be placed upon psychological adjustment. When this has proceeded satisfactorily more rigid control can be achieved at a later date without demoralizing the patient.

Here we encounter the notion that poor control of the diabetes is responsible for the various complications of the disease. This is a controversial matter and I had hoped in this paper to avoid controversy. To that end let us assume (erroneously) that the notion is factual. In that case the object of treatment should be the maintenance of as little glycosuria as possible. In the attainment of that end cooperation by observance of the prescribed regimen is important. It is a matter of experience that with most patients better cooperation is furnished with a regimen that is comfortable than one that is so restrictive that it is burdensome. In the latter case the patient is apt to kick over the traces altogether, rebelliously declaring that he may not live as long but "by God, while he does live he is going to *live*". The end result is that there is poorer control than might have been achieved with a more lenient regimen. Of course this is an individual matter, some patients make a fetish of the regimen.

Psychological Management in Children

With children the consequences of poor psychological management are even more far-reaching. Those who encourage parents in forcing a child to adhere to rigid restrictions create in the parents' minds excessive anxiety regarding the occurrence of coma, and of insulin shock. Such parents are overly protective of the diabetic child and at the same time, in their excessive sympathy for the child, they fail to discipline him—in the mistaken notion that the diabetic child must be given special consideration to make up for his misfortune. The child who grows up in such an emotional atmosphere is insecure and anxiety-ridden because the special privileges impress upon him the fact that he is different from others as much as do the restrictions. He frequently becomes rebellious against this difference between himself and others and against the restrictions that it imposes. His hostility toward the overly restrictive parents is not limited by the special privileges that he is given in compensation. He has difficulty in getting along with his fellows. He frequently deliberately neglects his diabetes to create anxiety in his over-anxious parents, to get even with them. Others are completely cowed and live lives of continual anxiety and frustration. The disturbance in personality that results may not be obvious until the late teens.

The influence of the emotional disturbance upon the metabolic disturbance is frequently disastrous. The unstable, rebellious, anxious individual is subject to wide swings in his moods. With these, come wide swings in his attitude toward his regimen. Sometimes he observes it closely, in a more resentful mood he disregards it altogether. Such persons frequently show grave ocular, vascular and renal complications but whether the complications are related causally to the emotional disturbance more directly or to the poor control of the metabolic disorder that results from it cannot be determined in any single case. Certainly there are patients whose diabetic control is poor, yet who suffer no complications.

Adolescence

From the psychological viewpoint the most dangerous time of life for the discovery of diabetes is adolescence. This is the time when the individual is going through the process of establishing confidence in himself, when he needs every resource that he can find within himself to sustain him in his attempt to feel that he can soon assume adult independence, adult responsibilities, and that he no longer needs to lean on his parents emotionally. It is the period in which he frequently attempts to reject parental authority a bit prematurely. He is frequently openly hostile to his parents for he is employing them as a symbol for the deep inner de-

pendence which he has not yet outgrown and which he must conquer. When diabetes appear in the midst of this scene it may come as a great blow and unless managed properly the individual may be driven back to his earlier complete dependence upon the parents or the emotional development may be arrested at that point. The behavior of the parents at this time is of paramount importance.

The adolescent must be intensively indoctrinated in the proposition that diabetes, though not curable is a correctible disorder—and that it will not affect his ability to stand on his own feet. For this purpose words alone will not suffice. The method of management must carry the same message. It should be placed in the hands of the patient to the maximum extent possible. An overly restrictive regimen must be avoided for it will make the patient feel that he is a sick person and under these circumstances it is difficult for the adolescent to have sufficient confidence in himself to go forward in his struggle for emotional independence. The parents should be given a minimum of responsibility for it. The parents' fears must be allayed; and they must be taught to interfere as little as possible in the management of the diabetes and in the patient's activities. Great tragedies occur when parents are emotionally incapable of avoiding overprotection of the children.

This paper attempts to direct attention to the human aspects of the management of the diabetic patient. It contains but the expression of opinions derived from a large experience with diabetics who have been closely observed by one physician as they lived through a generation of time; some from infancy to parenthood, some from adolescence to middle life, some from middle life to a advanced age. These opinions were formed within the area that will some day be remembered as the "private practice of medicine"; without the benefit of a grant, and without the benefit of the statistical approach; and they have been expressed without the employment of lantern slides. Lacking these cardinal requisites this effort cannot qualify as a "scientific" paper. By the same token the writer is spared the necessity of furnishing a Summary or Conclusion.

Discussion

Dr. A. A. Herold, Sr. (Shreveport): It was with considerable hesitation, bordering on reluctance, that I accepted the invitation to discuss a paper by so distinguished an authority as Professor Gardberg. When Dr. Gardberg was kind enough to supply me with a copy of his talk, I was relieved to learn that it did not deal with the therapy or dangers of diabetes from a medical standpoint, wherein he probably would have castigated some so-called authorities on the subject, but rather he has devoted most of his paper to the psychology of handling the cases, especially the very important childhood diabetes —which standpoint he has handled most excellently, as is usual with him, although I did not know, before, that he practices psychiatry.

Regarding this last object, namely juvenile diabetes, I have had considerable experience, dating back before and at the time of discovery of insulin. I recall the early days of insulin therapy—before it was available commercially —when parents became hysterical if a child developed signs of hyperglycemia; I recall the early days of this epoch when all food had to be measured and the patient was required to eat it **all**, regardless of whether or not the food was agreeable to the taste. Calories had to be exact and this did not always prove psychologically good for the victim. Now, that we are a little more liberal, one authority said "The diabetic child should not know that a banana or apple exists", and at present allows even sugar on the tray to appease the appetite.

Dr. Gardberg's essay is full of valuable advice and I hope everyone of my hearers will read it carefully, when published.

I wish to commend him, especially, for his closing paragraph, wherein he, in violation of the accustomed routine, announces that he is not showing any slides nor does he consider it necessary to furnish a summary of his remarks.

Experience With Bunamiodyl (Orabilex)®– A New Cholecystographic Medium

• The success with Orabilex was outstanding in 551 patients of the 623 to whom it was given. In only 18 the gallbladder failed to visualize, and in 14 visualization was poor.

SEYMOUR FISKE OCHSNER, M. D.
A. SELDON MANN, M. D.
New Orleans

PHYSICIANS must be constantly on the alert for improved methods for examinations that have become standardized because of their importance and frequent usage. Such an examination is cholecystography. This study was undertaken to evaluate the efficiency of bunamiodyl (Orabilex), a newly developed medium for radiographic visualization of the gallbladder.

Cholecystography has been a useful method of evaluating the gallbladder since it was introduced in 1924 by Graham and Cole.[1] Refinements in radiographic equipment and technic have improved the quality of roentgenograms. Improvements in opaque media have enabled better visualization of the gallbladder and a higher incidence of correct diagnoses.[2-6] At present the accuracy of cholecystographic diagnosis is extremely high if roentgenograms are carefully made and accurately evaluated.

Early reports indicated that Orabilex provided satisfactory opacification of the gallbladder with minimal serious reactions or unpleasant symptoms.[7-9] We have now given the standard dose of 6 capsules (total of 4.5 Gm.) to 623 consecutive patients having cholecystography in one medical section of the Ochsner Clinic.

Method

Six capsules of Orabilex were ingested on the evening before the radiographic examination. Roentgenograms were made twelve to fifteen hours later. Most patients were instructed to eat a light evening meal containing no fatty food, to omit breakfast, and to appear for examination at 9:00 A.M. Others were permitted to eat a light, fat-free breakfast, omit lunch, and come for examination at 1:00 P.M. Either schedule seems to be satisfactory.

Initial roentgenograms were obtained with the patient prone on the radiographic table, in postero-anterior and oblique projections. After a simulated fatty meal with Cholex,® additional roentgenograms were made one hour later, with the patient in prone, oblique, decubitus or erect positions. As processed, the roentgenograms were studied and appropriate modifications were made so as to obtain views of the organ completely clear of obscuring superimpositions of ribs, gas, or other shadows.

After obtaining the films, the technician questioned the patient about various symptoms and recorded them on a worksheet which accompanied the examination request card. After interpreting the roentgenograms, the radiologist completed on this same sheet information regarding the quality of opacification, positive diagnoses, residual medium in the colon, need for re-examination, and the like. This information has been collected and tabulated.

Results

Visualization of Gallbladder. Opacification of the gallbladder is the most important factor in evaluating any contrast medium to be used in cholecystography.

From the Departments of Radiology and Internal Medicine, Ochsner Clinic, New Orleans.

The success with Orabilex was outstanding. Visualization was good in 551 of the 623 patients. In 40 additional patients visualization was fair, being sufficient in each case to permit satisfactory interpretation. This means that in 591 patients (95 per cent) the gallbladder was satisfactorily visualized.

In 14 patients visualization was poor, and in 18 the gallbladder was not visualized. Subsequent study of the clinical records of these 32 patients disclosed that there was usually a significant reason for failure of opacification (Table 1).

TABLE 1
CONDITIONS PRESENT IN PATIENTS WITH NO OR POOR VISUALIZATION

	Poor Visualization	Non-Visualization
Radiopaque gallstones present	2	5
Radiolucent gallstones present	7	–
Previous operation	0	2
Cholecystitis (surgical proof)	2	3
Gallstones (surgical proof)	1	2
Significant hepatic disease	1	2
Biliary colic at time of examination	0	1
Gastric retention of medium	0	1
Gallstones seen in later examination	0	1
No explanation discovered	1	1
	14	18

Figure 1.—Normal cholecystogram with Orabilex.

The results seem to justify confidence in the ability of Orabilex to produce visualization in normal (Fig. 1) or relatively normal gallbladders. Poor or absent visualization in a patient with satisfactory hepatic function indicates an abnormal gallbladder or cystic duct, especially if prompt reexamination still does not reveal a cholecystic shadow.

Visualization of the Biliary Ducts. Although no special effort was made to visualize the ductal system, the ducts were at least partially revealed in 40 per cent of the cases (Fig. 2). This ductal visualization is in part a product of fairly dense opacification of the gallbladder. Some observers believe that a dense shadow will obscure small stones in the gallbladder, and we have noted temporary obscuration in two instances, in which small, faintly calcified stones were initially overlooked. This occurred in thin patients who received a full dose of 6 capsules of Orabilex. It is possible that it would be preferable to give only 4 capsules to persons weighing less than 120 pounds. Individual preferences will have to determine this issue, the desirability of seeing the ducts in many cases as opposed to the dis-

Figure 2.—Normal gallbladder and visualization of extrahepatic biliary ducts with Orabilex.

Figure 3.—Cholecystogram with Orabilex reveals a gallbladder largely filled with radiolucent stones and a small segment of a normal common duct.

advantage of possibly obscuring small stones (Fig. 3). Varying the dosage schedule in relation to the patient's weight and obtaining a film of the gallbladder before administration of the contrast medium are ways of minimizing the possibility of overlooking small gallstones.

Untoward Reactions. In persons already experiencing distressing symptoms from disease or nervousness, it may be difficult to evaluate the symptoms they attribute to ingestion of contrast medium. Nevertheless, we have attempted to do this and have included all definite complaints the patients thought were due to the Orabilex. Five hundred forty-seven patients (87.8 per cent) had no unpleasant side effects.

TABLE 2
ILL EFFECTS ATTRIBUTED TO ORABILEX IN 623 CASES

	Cases	Per Cent
Nausea	38	6.1
Epigastric pain	10	1.6
Diarrhea	8	1.3
Vomiting	7	1.1
Intestinal cramps	7	1.1
Skin reaction	4	0.4
Dysuria	2	0.3

The complaints in the remaining patients are listed in Table 2. In no case was the reaction severe. The relative infrequency of ill-effects and the mildness of those that did occur are noteworthy. From the patient's viewpoint, the infrequency of intestinal cramping and distressing diarrhea is a real improvement over other agents previously employed.

Residual Contrast Medium in Intestinal Tract. When Orabilex is identifiable in the small intestine or colon, it usually appears as a milky opacity. In no case was the examination unsatisfactory because of it. This type of residue is more desirable than the dense, granular appearance presented by some cholecystographic media. The granular densities may mimic or obscure small renal stones, or, if superimposed upon the gallbladder, they produce a confusing picture.

Excretion of Orabilex in Urinary Tract. Studies of Lasser and coworkers, using bunamiodyl tagged with radioactive iodine, indicate that about 25 per cent of the administered dose is excreted in the urine. In the process of excretion, no damage to the kidneys has been reported. The material is present in the urine, of course, and its presence there may result in a false reaction for albuminuria. This pseudo-albuminuria has been recognized as a possible result from other cholecystographic agents. Naturally, the incidence of the reaction is greater when a larger percentage of the contrast material is excreted through the urinary tract. Consequently, the urine should not be examined for albumin on the day after Orabilex has been taken for cholecystography.

Positive Diagnoses in this Series. Gallstones were discovered in 72 patients (11.5 per cent) and possible stones were noted in an additional 14 (2.3 per cent). The presence of mucosal lesions was suggested in 15 patients (2.4 per cent) and Aschoff-Rokitansky sinuses in 2 (0.3 per cent).

Summary

Orabilex, a new cholecystographic medium, was evaluated after its use in 623 consecutive cholecystograms from one

medical section at the Ochsner Clinic. Good visualization was achieved in 95 per cent of cases. Poor or nonvisualization was usually the result of some abnormal condition of the patient. No unpleasant side effects were noted by 87.8 per cent of patients. In the remainder side effects of epigastric pain or diarrhea, vomiting, intestinal cramps, dysuria or cutaneous reactions were mild. Elimination of contrast medium in urine may produce pseudo-albuminuria on the day of examination. At present, we consider Orabilex the cholecystographic medium of choice because of its low incidence of mild reactions and high incidence of satisfactory visualization of the gallbladder and occasional visualization of the extrahepatic biliary ducts.

References

1. Graham, E. A. and Cole, W. H.: Roentgenologic examination of the gallbladder: preliminary report of a new method of utilizing the intravenous injection of tetrabromphenolphthalein. J.A.M.A. 82:613 (Feb. 23) 1924.

2. Menees, T. O. and Robinson, H. C.: Oral administration of sodium tetrabromphenolphthalein. Am. J. Roentgenol. 13:368 (April) 1925.

3. Kleiber, N.: Zur Frage der peroralen Darstellung der Gallenblase. Deutsche med. Wchnschr. 66:1134 (Oct. 11) 1940.

4. Bryan, A. and Pedersen, N. S.: New gallbladder contrast medium: Priodax. Radiology 42:224 (March) 1944.

5. Christensen, W. R. and Sosman, M. C.: A preliminary report on telepaque, a new cholecystographic medium. Am. J. Roentgenol. 66:764 (Nov.) 1951.

6. Shapiro, R.: A preliminary report on Teridax, a new cholecystographic medium. Radiology 60:687 (May) 1953.

7. Teplick, J. G., Adelman, B. P. and Steinberg, S. B.: Orabilex, a new cholecystographic medium: a clinical report on 112 cases. Am. J. Roentgenol. 80:961 (Dec.) 1958.

8. Geffen, A.: An evaluation of Orabilex (Bunamiodyl): a new medium for cholecystography. Radiology 72:839 (June) 1959.

9. Morgan, L. A. and Parks, R. E.: A double-blind study of oral cholecystographic media; orabilex and telepaque. Radiology 74:436 (March) 1960.

10. Lasser, E. C., Meadows, P. M., Granke, R. C. and Feist, J. H.: Some observations of the absorption and excretion of bunamiodyl (Orabilex ®) in man, J. Nucl. Med. 1:79 (April) 1960.

Dengue

By S. M. Bemiss, M. D.

Professor of Theory and Practice of Medicine and Clinical Medicine

A few days ago I promised some of the gentlemen of the class to tell them how much, or how little, I know of dengue. If, simply observing, or even treating a large number of cases of a given form of sickness gave one competent information respecting its essential nature, I might then be qualified to give you a much more accurate account of dengue as a substantive disease, then I am now able to lay before you. * * *

The term "dengue" as a designation of a particular affection, is differently accounted for. It has been said that this is a Cuban word for cloak, and that it is applied to this disease because of the chilly sensations attending its advent. The best accepted account of the origin of the word is that the term "dandy fever" was first given to the disease by the negroes of Jamaica or Trinidad from the peculiar affected gait of persons attacked by it and was afterwards corrupted into "dengue." There are many synonyms for the disease, "scarlatina rheumatica" is one of the oldest and most interesting to you—because it shows the prominent part accredited to the eruption as a symptom of the early history of the affection. "Breakbone" fever is a common vulgar name applied to the malady—and those of you who have already suffered with attacks, will say that it is not an inapt designation.

New Orleans M. & S. J. 8:501 (December) 1880

Prevention of Strokes*

• It is important to make an accurate diagnosis in cerebral ischemia, and angiography must be relied upon in order to map the location of the occlusion and plan intelligent treatment.

ALTON OCHSNER, JR., M. D.†
New Orleans

IN view of the great strides that have been made in preventive medicine in America, it is only logical that we should consider prevention of our third greatest killer—strokes. Approximately 200,000 deaths annually are related to this condition. Of equal importance, however, is the fact that 2,000,000 living Americans have survived strokes, many having been left, however, with residual incapacitating neurologic deficits.

A stroke may occur without warning, but fortunately about three-fourths of the patients have preliminary symptoms which, if properly heeded, should permit institution of preventive measures. In most cases, symptoms are transient and recurring. In others they may be slowly progressive.

Factors Influencing Cerebral Ischemia

It is well known that strokes are caused by thrombosis (65 per cent), hemorrhage (30 per cent) and arterial embolism (5 per cent), but in all the basic underlying condition seems to be ischemia of cerebral tissue. It behooves us, then, to direct attention to the factors that influence cerebral ischemia. These include the volume flow of blood, the oxygenation of the blood and the metabolic requirements of the brain. The cerebral blood flow is directly proportional to the systemic blood pressure, which, in turn, is influenced by the cardiac output, the total peripheral resistance of the general vascular system, and reflex control involving the vasomotor center and carotid sinuses. Decrease in blood pressure, even to a normal level, may initiate symptoms of cerebral ischemia. Such a drop can be produced by oversedation, vasodilatory or antihypertensive drugs, cardiac arrhythmias, or myocardial weakness. Even activity may shunt blood away from the head to more active regions, such as the legs. Vascular resistance to flow is determined by the degree of intra-arterial obstruction, the vascular tone of the smaller vessels, venous pressure and cerebrospinal fluid pressure, and the viscosity of the blood.

Arterial occlusion may be the result of intraluminal obstruction, compression or angulation. Obstruction may be caused by an atheromatous plaque or intimal thickening after arteritis or infection, a thrombus or embolus, or a dissecting aneurysm. Compression may be the result of spasm, scar, tumor, such as neoplasm or hematoma, and even the trachea in cases of anomalous origin of the artery. Angulation is due to arteriosclerotic elongation of the vessel.

The location of the occlusion is important. The most common site of atherosclerotic plaques in the head and neck is the proximal portion of the internal carotid artery and common carotid bifurcation; the origins of vertebral and middle cerebral arteries follow next in order. Of course, any portion of the arterial tree may contain a stenotic or occlusive lesion. There is also the rare but interesting condition of obstruction at the origin of the vessels of the aortic arch (pulseless disease, Takayasu's disease, Martorell syndrome). Clinically, one-fourth of the patients with cerebrovascular disease can be shown to have extracranial occlusions [1]

* Presented at the Eighteenth Annual Meeting of the Louisiana State Medical Society, May 3, 1960, in Baton Rouge.

† From the Department of Surgery, Ochsner Clinic, New Orleans.

and at necropsy the incidence is as high as 50 per cent.[2]

The degree of occlusion is, of course, equally important since a decrease in diameter of the vessel of about 50 per cent is required to alter its flow significantly.[3] There may be, however, no difference in the symptoms associated with stenotic or occluded vessels. In either situation the patient may have no symptoms, transient symptoms, or symptoms of a gross infarct, depending upon collateral circulation.

The collateral circulation, therefore, is extremely important. It is partly developmental and partly acquired. In relation to the developmental aspects, we are essentially concerned with the anatomy of the circle of Willis. Anatomic studies of Kirgis and associates[4] indicate that the variations that occur in the circle of Willis are extremely important in determining how well a patient will tolerate occlusion of one of the major vessels, such as the internal carotid artery. The textbook picture in which all vessels are of fairly adequate size and patent is, to be sure, an unusual one. The most common pattern has small but patent posterior communicating vessels, there being essentially no flow through these vessels, however, because of the balance of pressures in the carotid and vertebral systems. In the most critical type of variation, "fetal trifurcation," the internal carotid artery on one side supplies the anterior, middle and posterior cerebral vessels with little or no connection to the vertebral system. Another significant variation is the "anterior trifurcation," in which the internal carotid artery, in addition to supplying the middle cerebral, has a big anterior vessel which divides to form both right and left anterior cerebral vessels. In this situation, the internal carotid on the opposite side supplies the posterior cerebral, as well as the opposite middle cerebral artery.

The acquired collateral circulation varies, depending on the location of the arterial occlusion within the internal carotid artery. The three main pathways are (1) from the external carotid to the internal carotid on the same side via the ophthalmic artery, (2) via the occipital branch of the external carotid and occipital muscle branches of the vertebral. There is also (3) rich anastomosis between the vessels of the pia on the surface of the brain.

Oxygenation of the blood is related to the amount and saturation of hemoglobin. The metabolic needs are related to cerebral function (i.e., cellular enzyme activity), body temperature and availability of oxygen and glucose. Age has no influence on cerebral ischemia.

Symptoms

Symptoms of cerebral ischemia, therefore, are dependent upon numerous factors. However, in general, certain symptoms occur which suggest carotid arterial insufficiency and others basilar arterial insufficiency. The former is usually manifested by paresthesias, perhaps some paresis or even paralysis of an arm and leg on one side. The patient may be dysphasic of aphasic. When the dominant hemisphere is undergoing ischemia on the ipsilateral side, amblyopia, amaurosis or hemianopsia may be present. Disorientation or confusion, convulsions, headaches, possible syncope or psychiatric disorders may occur. In more advanced cases, particularly those that involve the origin of the arteries as they leave the aortic arch, one may find masticator claudication, tinnitus, skin muscle atrophy of the face, and Horner's sign. The most diagnostic symptoms for carotid arterial insufficiency are ipsilateral visual defects and contralateral sensory and motor disturbances involving the arm and leg, but a combination of symptoms is seen in only 10 per cent of cases.[5]

Basilar arterial insufficiency is most likely to be manifested by dizziness and ataxia, weakness, nausea and vomiting, diplopia, nystagmus, and cranial nerve deficits. However, basilar arterial disease can produce symptoms believed to be typical of carotid arterial insufficiency. If these symptoms vacillate from one side of the body to the other, however, basilar arterial insufficiency is the most likely

diagnosis. Knowledge of the symptoms that can be associated with occlusion of any artery is really of limited value in making an anatomic diagnosis, but the presence of any of them should alert one to the possibility that cerebral ischemia may exist, and the proper investigation can be undertaken.

It can be easily appreciated that the same symptoms of cerebral ischemia may be caused by conditions other than vascular disease, so that an accurate diagnosis is extremely important. Even in the presence of demonstrated vascular disease, one must be sure that the patient does not also have a brain tumor, subdural or intradural hematoma, multiple sclerosis, collagen disease, syphilis, angiomatous malformation, porphyuria, or thoracic outlet syndrome.

Diagnosis

Some information, of course, may be gained clinically about the presence, degree and location of arterial occlusions which might be producing cerebral ischemia, but the only procedure that will permit a definite anatomic diagnosis is angiography. The volume of the vascular pulses, presence and absence of murmurs over the vessel, and ability to withstand unilateral carotid compression, all give information but this may be anatomically misleading. Ophthalmodynamometry gives some more direct evidence.[6] By this means the retinal arterial pressure is measured bilaterally, and a significant difference between the two sides indicates decreased pressure in the ophthalmic artery which is, of course, a branch of the internal carotid artery within the skull. This suggests a high degree of stenosis of the internal carotid artery on that side. Electroencephalographic tracings, particularly with use of the tilt table, show changes but they are relatively nondiagnostic.[7]

One must always rely on angiography in planning intelligent treatment. With modern technics it is safe regardless of the age of the patient.[8] It is, of course, important that as complete arterial mapping as possible be obtained, including visualization of the intracranial arteries, so that one may be able to see the nature of the filling and interpret the anatomy of the circle of Willis. From a practical standpoint it is not easy to visualize all the major arteries supplying the brain; therefore, bilateral carotid arteriograms are always done first. Vertebral arteriograms are reserved for patients with symptoms suggestive of basilar arterial insufficiency or those patients with symptoms of cerebral ischemia in whom no lesions are found on carotid arteriography. Of course, if the results of the physical examination are suggestive of the possibility of more proximal occlusion near the arch of the aorta, then thoracic aortography is done to visualize this area as well.

Treatment

Prevention of subsequent strokes depends upon adequate treatment after accurate diagnosis. Each patient must receive individual care, depending on the nature and extent of the disease. Because of the many ramifications of such care, it is not possible for one physician to give optimum care to every patient. For this reason, at the Ochsner Clinic we have evolved a plan whereby the patient is evaluated by a team consisting of a neurologist, neurosurgeon, vascular surgeon and an internist particularly interested in hypertensive disease.

Fortunately, there are now several available modalities of treatment. Among medical measures are prolonged administration of anticoagulants, chemical sympathectomy, vasodilator drugs, tranquilizers, abstinence from smoking, and treatment of related medical conditions. Anticoagulants have been shown to have some protective value but should not be given to all patients because the risk of hemorrhage is real. They are not a substitute for thrombo-endarterectomy, when this can be done, as they do not prevent the atheroma from growing and may even precipitate a hemorrhage beneath the plaque. They should be given, however, when surgical treatment is unsuccessful or when vascular disease is diffuse. Sym-

pathetic nerve blockage has proved to be of value to relieve some acute symptoms of cerebral ischemia. Vasodilator drugs have limited value. Cerebrovascular musculature is relatively unresponsive and, apparently, only papaverine and carbon dioxide will dilate the cerebral vessels. Tranquilizers will help tense, anxious patients. There is also some experimental evidence that they may retard development of atherosclerosis.[9]

Treatment of certain medical conditions may also be helpful. These include hypertension, diabetes, polycythemia, thromboycythemia, anemia, anoxia, hypercholesterolemia, syphilis, obesity and heart disease that may be associated with embolic phenomena. The problem of hypertension in these patients is a special one. On the one hand, the increased blood pressure is known to increase the atheromatosis and, of course, always poses a threat of a hemorrhagic stroke. On the other hand, vigorous treatment of hypertension without removing the intra-arterial occlusion may lead to poor cerebral perfusion and thus precipitate a stroke. Hypertension in these patients may be, to a certain extent at least, compensatory. In one patient we noted drop in blood pressure after operation on the carotid artery. This may be the result of improving the effectiveness of the carotid sinus reflex.

If localized occlusions in extracranial vessels can be identified, thrombo-endarterectomy should be done in these areas. This is relatively safe now,[10] as it is done with use of a local anesthetic, and if the patient does not tolerate clamping of the common carotid artery, a temporary plastic shunt or the perfusing of oxygenated blood into the distal internal carotid is carried out while the operation is being performed. We have now done carotid endarterectomy on 35 patients, in 23 of whom symptoms have been completely relieved or greatly improved. The best results are in patients who have only stenosis and are having recurrent transient symptoms. Results are poor if the artery is completely occluded. There may be some salvage after the cerebral infarct has occurred but this is dependent upon prompt (preferably within a few hours) treatment. After a matter of days nothing is to be gained. The best treatment is preventive. The time to institute investigation and treatment is before the stroke occurs, when the patient is having warning signs of cerebral ischemia.

It is to be hoped that the problem of strokes will recapitulate that of poliomyelitis, and that we will start thinking and acting in terms of preventing rather than treating the stroke, but to do this we physicians must convince ourselves that we can do this. Only then will we sharpen our diagnostic acumen to the point where we will recognize the patient who is having only transient cerebral ischemia.

References

1. Fields, W. S., Crawford, E. S. and DeBakey, M. E.: Surgical considerations in cerebral arterial insufficiency. Neurology 8:801 (Nov.) 1958.

2. Hutchinson, E. C. and Yates, P. O.: Carotico-vertebral stenosis. Lancet 1:2 (Jan. 5) 1957.

3. Mann, F. C., Herrick, J. F., Essex, H. E. and Baldes, E. J.: The effect on the blood flow of decreasing the lumen of a blood vessel. Surgery 4:249 (Aug.) 1938.

4. Kirgis, H. D., Reed, A. F. and Jackson, J. D.: Variations in the anatomy of the Circle of Willis. Anat. Rec. 124:318 (Feb.) 1956.

5. Silverstein, A.: Occlusive disease of the carotid arteries. Circulation 20:4 (July) 1959.

6. Schimek, R. A. and Beallo, A.: Ophthalmodynamometry: a diagnostic aid in cerebrovascular disease. Am. J. Ophthalmol. 48:220 (Sept.) 1959.

7. Meyer, J. S., Leiderman, H. and Denny-Brown, D.: Electroencephalographic study of insufficiency of the basilar and carotid arteries in man. Neurology 6:455 (July) 1956.

8. Jackson, J. D.: Carotid and vertebral angiography. J. Louisiana State M. Soc. 111:82 (March) 1959.

9. Myasnikov, A. L.: Influence of some factors on development of experimental cholesterol atherosclerosis. Circulation 17:99 (Jan.) 1958.

10. DeCamp, P. T. and Ochsner, A., Jr.: Reconstructive surgical procedures for cerebrovascular insufficiency. J. Louisiana State M. Soc. 111:85 (March) 1959.

Discussion

Dr. John D. Jackson (New Orleans): I wish to congratulate Dr. Ochsner on his excellent presentation. Since cerebrovascular disease is one of the common causes of death, it is a subject of vital interest to us all. Approximately one-fourth of all patients with cerebrovascular disease have symptoms due to stenotic or occluded carotid and vertebral arteries. Our interest is principally in this group because it is in these that the most can be accomplished.

Dr. Ochsner has outlined a plan of treatment of strokes. I would like to re-emphasize the role of angiography in the management of these patients. Angiography is necessary to confirm the

diagnosis and to establish the site of occlusion if the stroke is due to obstruction or stenosis of the carotid or vertebral artery.

The technic of angiography differs, depending on whether the carotid or vertebral artery is to be visualized. However, both procedures are done with use of a local anesthetic and the average premedication dosage of ⅙ grain of morphine sulphate, 1/150 grain of atropine sulfate and 2 grains of sodium luminal given forty-five minutes beforehand. About thirty minutes is required to complete the procedure.

To perform carotid angiography, the carotid artery is cannulated percutaneously with a No. 18 needle just above the clavicle. Usually, only two 10 cc. injections of contrast medium are necessary on each side to demonstrate the carotid artery in the head and neck. For vertebral angiography, one of two methods may be used. The subclavian artery may be cannulated by a percutaneous injection through the superclavicular region. When the dye is rapidly injected into the right subclavian artery with a tourniquet on the extremity of that side, it passes in a retrograde manner in the subclavian artery and flows up the vertebral artery.

The other method is to expose the brachial artery or its radial branch and pass a cardiac catheter up the artery into the subclavian artery to the origin of the vertebral artery before injection of 10 cc. of contrast medium.

How safe is angiography? We consider it a safe procedure and use it routinely in most patients with symptomatic cerebrovascular disease. We do not consider old age a contraindication in itself. It is true that many complications of cerebral angiography, including death, have been reported. However, most reported complications have been due to the irritating effects of the contrast medium. A less irritating medium is now used with proportionately less difficulty.

One year ago we made a study of more than 200 cerebral angiograms; the results of this study were reported in the Journal of the Louisiana State Medical Society. The complications included 5 cases of transient hemiparesis, which subsided in less than four hours. Three patients had a convulsion during the procedure, which lasted less than two minutes and left no detectable residual. Several patients had urticaria, which was relieved by intravenous administration of Benadryl®. Most patients complained of a sore, stiff neck the next morning but this was transient.

I would estimate that during the past year about 100 angiograms have been made at the Ochsner Clinic. In this group 2 patients had severe reactions. In one patient with severe cerebrovascular disease hemiplegia developed after angiography. The other patient became hemiparetic and confused six hours after angiography but this completely disappeared after thirty-six hours. These are the only severe reactions that occurred among all patients who had angiograms in the past three years at the Ochsner Clinic. Both patients were in critical condition before angiography. Consequently, there is some debate concerning the part angiography contributed to the change in the clinical state of the patients.

The Journal of the Louisiana State Medical Society

Established 1844

Published by The Journal of the Louisiana State Medical Society, Inc. under the jurisdiction of the following named Journal Committee:

O. B. Owens, M. D., Ex-Officio
C. M. Horton, M. D., Vice-Chairman
Sam Hobson, M. D., Secretary
Edwin H. Lawson, M. D.
J. E. Knighton, M. D.
Mannie D. Paine, Jr., M. D.

EDITORIAL STAFF

PHILIP H. JONES, M. D., Editor

COLLABORATORS—COUNCILORS

Spencer B. McNair, M. D.
J. E. Clayton, M. D.
Guy R. Jones, M. D.
C. E. Boyd, M. D.
Henson S. Coon, M. D.
John L. Beven, M. D.
J. Y. Garber, M. D.
R. E. C. Miller, M. D.

C. GRENES COLE, M. D., General Manager
1430 Tulane Avenue

Subscription Terms: $4.00 per year in advance, postage paid, for the United States; $5.00 per year for all foreign countries belonging to the Postal Union.

News material for publication should be received not later than the eighteenth of the month preceding publication. Orders for reprints must be sent in duplicate when returning galley proof.

Manuscripts should be addressed to the Editor, 1430 Tulane Ave., New Orleans, La.

The Journal does not hold itself responsible for statements made by any contributor.

Editorial

Immunization With Influenza Virus Vaccine

Influenza continues to produce widespread, but an indeterminate amount of morbidity, and also, is the cause of a definite, and statistically recognizable mortality. For this reason, clinicians have advised and carried through protective immunization on a small scale with gratifying results. Experience in this field has been intensified and the benefits of the procedure clearly indicated by results obtained in the 1957, 1958, and 1960 epidemics of influenza.

The first two outbreaks resulted in 60,000 more deaths than would be expected under normal conditions. The third outbreak occurred during the first three months of 1960 and caused 26,000 excess deaths. These were considered to be the result of influenza. These departures from the usually predicted norms prompted the Surgeon General's Advisory Committee on Influenza Research to analyze the cause and seek measures to prevent such an occurrence in the future.

The committee considered that the new antigenic variant, the Asian strain, was the direct cause of the excess number of deaths, not only in the total population, but most markedly among the chronically ill, the aged, and pregnant women. Accordingly, the Public Health Service is urging a continuing program of virus vaccince inoculation to protect these high risk groups, in order to prevent a recurrence of this excess mortality.

In each of three epidemics the population over 65 accounted for more than half of the number of excess deaths. It is recommended that the following should be routinely immunized each year:

1: All persons 65 years or older.

2. Pregnant women.

3. Persons of all ages who suffer from chronic debilitating disease, in particular, the following: (a) rheumatic heart disease, especially mitral stenosis; (b) other cardiovascular diseases, such as arteriosclerotic heart disease or hypertension — especially patients with evidence of frank or in-

cipient insufficiency; (c) chronic bronchopulmonary disease, for example, chronic asthma, chronic bronchitis, bronchiectasis, pulmonary fibrosis, pulmonary emphysema, or pulmonary tuberculosis; (d) diabetes mellitus; (e) Addison's disease.

Nearly 90 per cent of the excess deaths were attributed to two categories of conditions: pneumonia - influenza (40 per cent) and cardiovascular-renal diseases (46 per cent).

Numerous properly controlled studies have shown that the vaccine is about 70 per cent effective in preventing the disease. Some investigators feel that it is as much as 77 per cent effective. One group of investigators reports that the injection of a single strain evokes in the adult person an antibody-recall mechanism previously established by initial childhood antigenic experiences with related influenza viruses. The new injection bolsters antibody levels against viruses from that family of strains, and provides some degree of protection against influenza caused by a new variant. The time of protection begins in about two weeks.

Another group reported that after six months there is a considerable decline in antibodies. Immediate response was in proportion to the amount of antigenic substance given. The dose recommended is 500 CCA units per cc. (chick cell agglutination units). This is contained in 1 cc. and is to be given subcutaneously, administered on each of two occasions separated by two or more months. Preferably this schedule of vaccination should be completed by November 1, each year.

Contraindications are recognized among persons who are unable to eat eggs or chicken because of food allergy, or who are known to have had a definite allergic reaction, whether urticarial, asthmatic, or anaphylactic, on previous inoculation of an egg vaccine. In adult populations there is a low incidence of reactions which may take the form of transient febrile response or local tenderness at the injection site, and within twelve to thirty-six hours some of the respiratory symptoms as though the individual might be taking an acute cold. Penicillin is not used in preparation of the vaccine and sensitivity to this substance would be of no concern in giving the vaccine.

The Public Health Service has issued licenses to eight of the large and dependable pharmaceutical houses, who are producing vaccines of proper strength and suitable composition.

The experience of certain clinicians indicates that the vaccine is protective against acute upper respiratory infections, not necessarily proven to be due to influenza, and that many individuals whose immunity to a given infection lasts only a few weeks are benefitted by monthly injections of the influenza virus vaccine. In such situations, the vaccine makes the difference between constant disability and comparative comfort.

This continuing program of routine annual influenza immunization of high risk groups, sponsored by the Public Health Service, is not directed at the public nor is it an appeal for mass immunization. It is an appeal through established channels of communication to physicians to add influenza vaccination for the aged and chronically ill to the established practices of immunization, just as such programs are being used against diphtheria, pertussis, and tetanus. The program rests on a basis of adequately controlled experimentation, group testing, and clinical experience. It can be of great assistance to the aged and infirm. It should be utilized by physicians generally.

Burney, Leroy E.: Influenza Immunization, Pub. Health Rep. 75:944 (Oct.) 1960.

Influenza Fact Sheet, Pub. Health Serv. (August 1) 1960.

Dull, H. Bruce, et al.: Monovalent Asian Influenza Vaccine, J. A. M. A. 172:1223 (March 19) 1960.

Jensen, Keith E., Woodhour, Allen F., and Bailey, Ann A.: Immunization with Polyvalent Influenza Vaccines, J. A. M. A. 172.1230 (March 19) 1960.

ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

PRESS AWARDS

It is time to send in your nominations for our Annual Press Awards. These awards are presented each year to daily and weekly newspapers who publish outstanding articles, features, editorials or series of original articles dealing with health and medicine. Winners will be selected at or immediately prior to our Annual Meeting.

A DAY TO BE REMEMBERED

The Surgical Association of Louisiana will hold their Annual Meeting on Sunday, November 20th, 1960 at Sheraton-Charles Hotel. Dr. Henry T. Bahnson, Associate Professor of Surgery, Johns Hopkins University, and Dr. R. B. Turnbull, Department of Surgery, Cleveland Clinic, Cleveland, Ohio will be the out-of-state speakers in addition to a number of speakers within the state.

A splendid program has been prepared and a good attendance expected. There will be a banquet for members and their wives and guests at 8:00 P.M. Tickets can be obtained at the registration desk.

Don't forget the date and attend, thereby, supporting your organization. A scientific treat along with a most enjoyable day and evening awaits you.

REPORT OF FIRST REGIONAL RURAL HEALTH CONFERENCE OF THE SOUTHERN STATES

On October 7th and 8th, 1960, the First Regional Rural Health Conference was held in Atlanta, Georgia, and Louisiana was represented by Dr. F. P. Bordelon of Marksville and me, although Dr. Ralph V. Platou, Professor Pediatrics of Tulane University served on a panel.

On Friday morning the meeting opened with an invocation and then greetings from the Medical Association of Georgia by Milford B. Hatcher, M. D., president of the association, in which he spoke on Health Promotion of the state of Georgia.

Dr. F. A. Humphrey, chairman of the Council on Rural Health of the A.M.A., spoke on the "Definition of Purpose" in which he told of the birth of the organization in 1945. At this time the chief topic was "Help Rural People to Help Themselves".

The next speaker was M. O. Watkins, Ph.D., Director of Agricultural Extension Service of the University of Florida. The theme of his talk being "Joining Hands for Community Health". He extended compliments to the A.M.A. and the Council on Rural Health for their great work and explained how progress meant adjustments and this in turn meant more problems, which dealt in mechanization of farms causing loss of jobs. This in turn causing varied problems including health problems. He explained the functions of the different government agencies or organizations and how each has its own objects and contributes to the health and welfare on its own constituents but all joining in a common program in preventive measures in safety and the conservation of health. He explained the hazards of farm machinery and implements and of the use of pesticides in which all are essential to the economical production of farm produce, but may be dangerous to the health and welfare of the farmer. He then went into the dangers of animal diseases.

Next on the agenda was a skit of doctor, mother, and child which explained the administration of the vaccines for the different contagious diseases, especially those of childhood.

Then James Lieberman, D.V.M., Assistant Chief Training Branch, Communicable Disease Center of Atlanta, discussed Animal Disease and Human Health conditions. Discussed were Psittacosis, Rabies, Tularemia, Anthrax, Encephalitis, Bovine Tuberculosis, Brucellosis, Trichinosis, Tape worm, Hook worm and Mycotic diseases. He also went into the effects of human consumption of milk from cattle being given antibiotics and allergic reactions produced.

Following this was another skit entitled "Joining Hands For Healthy Environment."

Cast: P.T.A. President
Mrs. Charles D. Center
Health Education Consultant
Georgia Department of Public Health, Atlanta

Town Mayor
Mr. Jesse C. Norman, Jr.
Program Management Officer,
Training Branch, Communicable Disease Center, Atlanta

County Health Officer
John McCroan, Jr., Ph.D.
Asst. Director, Epidemiology
Georgia Department of Public Health, Atlanta

State Health Officer
Mr. William A. Hansel, Director,
Local Health Administration Services
Georgia Department of Public Health,
Atlanta

U. S. Public Health Service Officer
Mr. Donald Schilliessmann, Chief
State Aid Section, Technology Branch,
Communicable Disease Center, Atlanta

The afternoon session was presided over by W. Wyan Washburn, M. D. of Boiling Spring, South Carolina. The theme was the improvement of general health conditions in small towns or communities. How to go about securing state and federal help in securing portable water, sewage, sanitary health survey, public health service, housing or any other project pertaining to the health and welfare of local communities.

This was followed by a panel on "Safety—Home, Work, Play" composed of—

Ralph V. Platou, M. D.
Professor of Pediatrics
Tulane Medical School
New Orleans, Louisiana

Mr. G. D. Kite
Extension Agricultural Engineer Chairman
Extension Safety Committee
Virginia Agricultural Extension Service
Blacksburg, Virginia

J. H. Venable, M. D., Director
Department of Public Health
State of Georgia
Atlanta, Georgia

Mr. J. N. Busby, Ass't Director
Agricultural Extension Service
University of Florida
Gainesville, Florida

Martin P. Hines, D.V.M.
American Veterinary Medical Assn.
Raleigh, North Carolina

Col. Wm. P. Trotter, Director
Georgia Department of Public Safety
Atlanta, Georgia

Dr. H. A Mathews, President, Carolina Rural Safety Council, Canton, North Carolina acted as chairman to the above panel and the Reactor Panel which was composed of—

Seth H. Hurdle, M. D., M.P.H.
Deputy State Health Officer
Salisbury, Maryland

Mr. Earl B. Garrett
North Carolina State Grange
Raleigh, North Carolina

Miss Oris Cantrell
Associate Editor
Home Department
The Progressive Farmer
Birmingham, Alabama

Mr. E. H. Agnew, President
South Carolina Farm Bureau
Columbia, South Carolina

Mrs. John M. Chenault
Rural Health Chairman
Woman's Auxiliary to
American Medical Association
Decatur, Alabama

This panel asked the leading questions, then the whole conference was permitted to ask questions of the panel all pertaining to the theme of the panel.

That evening at a banquet Dr. Julian P. Price spoke on a look at the national scene. In this talk he covered the work of the day from a national level. The order of the day was stopped for the television Nixon-Kennedy debate.

On Saturday morning October 8th the meeting was presided over by Dr. Francis T. Holland who introduced the discussion leader for the morning, Milton D. Kruegar, Executive Secretary of the Medical Association of Georgia.

The first speaker introduced was Dr. H. Phillip Hampton on "What's Involved in the Cost of Medical Care" in which he explained the part played by Physicians, Surgeons, Hospitals, Drugs, Laboratories, Dentists, and Nurses. He discussed the costs of each against their relative value. In this discussion he explained the dangers of socialized medicine in which he gave the history of medicine beginning with early civilization and the gradual encroachment of the government into medical services rendered. In defending the high cost of hospitalization today he showed where two-thirds the cost of running a hospital is in wages. He compared the long hospitalization of twenty years ago to the short periods of today, making the per diem cost high but the over all cost about the same.

Mr. S. G. Chandler next spoke on "Health Opportunities Through Organized Community Development Groups" told us of the transition period the rural south is now going through from agricultural to industrial and that there has been an eighty percent increase in manufacturing here in the south.

Mr. Morris McGough introduced three high school students.

The first to be introduced was Miss Carolyn Ware who was the National 4-H Club safety winner for 1959. In her talk she stressed general safety of home and general public such as air rifle and teenage auto safety.

The next to be introduced was Miss Mary

Lou Maness who spoke on health. She was the 4-H Club Health winner for 1960.

The third speaker being Mr. Earl Cheek, Jr. of F.F.A. and his topic was Community Health in which he stressed farm safety especially in use of farm machinery.

Mr. S. G. Chandler next showed some slides demonstrating the use of all of your resources for Community Health.

Mr. Dorris W. Rivers was the last speaker his subject being "Conference Summary and a Look Ahead" in which he pictured the changing Rural Communities caused by mechanization, mobility, the change from rural to urbanism and industrialization.

Guy R. Jones, M. D.
Member, Rural Health Committee

INFORMATION FURNISHED BY HEALTH INSURANCE ASSOCIATION OF AMERICA

Chicago—"At least 288 voluntary health insuring organizations currently issue new individual hospital or surgical policies to persons 65 years of age or over," Ardell T. Everett, Second Vice President of the Prudential Insurance Co., Newark, N. J., said.

These organizations include insurance companies, Blue Cross - Blue Shield plans and other insuring plans, Mr. Everett said in a speech delivered at the Health Insurance Association of America's 1960 Individual Insurance Forum, held at the Drake Hotel, Chicago.

Mr. Everett also reported that:

—At least 51 insurance companies offer individual health insurance policies guaranteed renewable for lifetime, and that of these, at least 31 companies issue this lifetime protection to persons 65 or over.

—Several insurance companies offer policies through a mass enrollment approach to all senior citizens regardless of medical history.

—At least 82 insurance companies, which issue 90 per cent of the group health insurance written by the insurance business, and a number of other insuring organizations offer policies continuing coverage under group plans for retired employees.

—At least 214 insuring organizations give retirees the option to convert from their group plan to an individual policy.

In his speech about the senior citizen population, entitled "Sixteen Million—And Going Up," Mr. Everett said the resolution of the health care problem of the aged "will determine the ultimate solution of all health problems for all ages." He urged the HIAA's 267 member companies to become even more active in providing senior citizen coverage.

Stressing that his views were personal opinions and not necessarily those of his company or any organization, Mr. Everett told his audience that health care has become a "very satisfactory" political action device.

"It is emotional in nature; it is hard to define; it is difficult to oppose; it draws a wide press," he said. "We know that the welfare planners will be satisfied to start the legislation at any age, in any manner, in any amount. With them the foot-in-the-door concept is not just an adage; it is a realistic approach."

He read this portion of the HIAA's policy on health care for the aged:

> "That segment of our older population unable to finance the costs of health care for themselves because of their limited means should have assurance that health care is available to them when they need it. To that end, the health insurance business supports assistance programs to supplement the efforts of voluntary agencies . . .
>
> "The health insurance business supports a federal matching funds program which would encourage development of nursing home facilities, of suitable standards, for older persons who need medical attention of less scope than full hospital care."

Mr. Everett said he believes this policy "correctly and properly interprets the extent to which governments should be involved in the health care field and infers the proper method of financing." He then declared:

"Any approach which suggests or includes any type of compulsory program, regardless of limitations on age or extent of coverage, inevitably will lead our country farther down the road to the total welfare state."

G. P.'s HOLD SUCCESSFUL MEETING IN LAFAYETTE

The Louisiana Academy of General Practice held its annual meeting in Lafayette in mid-October. Among the guest speakers appearing on an outstanding scientific program were Dr. Floyd C. Bratt, Rochester, New York, president-elect of the American Academy of General Practice; Mr. Willard E. Bennett, labor relations superintendent, Cities Service Refining Corporation, Lake Charles; Dr. Don W. Chapman, Clinical Professor of Medicine, Baylor University College of Medicine; Dr. William M. Christopherson, Professor and Chairman of the Department of Pathology of the University of Louisville School of Medicine; Dr. I. Phillips Frohman, Washington, D. C.; Dr. Lesley M. Warshaw, chief of Radiology, St. Patrick's Hospital, Lake Charles; Dr. Rafael C. Sanchez, New Orleans, and Dr. Theodore A. Watters, Clinical Professor of Psychiatry, Louisiana State University School of Medicine. Dr. E. B. Flake of Shreveport was installed as president of the Academy, succeeding Dr. J. William Crookshank of Lake Charles.

ORLEANS PARISH ELECTS OFFICERS

Dr. John F. Oakley has been named president-elect of the Orleans Parish Medical Society for 1961. Others elected to office at the Society's October meeting were Dr. John J. Archinard, first vice-president; Dr. Louis A. Monte, second vice-president; Dr. John L. Kron, third vice-president; Dr. C. F. Bellone, secretary; Dr. Spencer B. McNair, treasurer; Dr. J. Morgan Lyons, librarian, and Dr. C. Walter Mattingly and Dr. William C. Rivenbark, additional members of the board of directors for two-year terms.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Ascension	Third Tuesday of every month	
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Lafayette	Second Tuesday of every month	Lafayette
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Independence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

TWENTY-FOURTH ANNUAL MEETING THE NEW ORLEANS GRADUATE MEDICAL ASSEMBLY

The twenty-fourth annual meeting of the New Orleans Graduate Medical Assembly will be held March 6, 7, 8 and 9, 1961, headquarters at The Roosevelt Hotel.

Nineteen outstanding guest speakers will participate and their presentations will be of interest to both specialists and general practitioners. The program will include fifty-seven informative discussions on many topics of current medical interest, in addition to clinicopathologic conferences, symposia, medical motion pictures, round-table luncheons, scientific exhibits and technical exhibits.

Following the meeting in New Orleans, arrangements have been made for a clinical tour to the Orient leaving New Orleans via air on March 10, to make a connection with Jet flight leaving Los Angeles at night. The itinerary includes visits to Hawaii, the Philippines, Hong Kong and Japan, returning on March 30 to gateway city of choice—LOS ANGELES, SAN FRANCISCO, or SEATTLE. (Optional extensions may be arranged).

Details of the New Orleans meeting and the tour are available at the office of the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12, Louisiana.

DR. MILLER REPLACES DR. HAROLD CUMMINS DEPARTMENT OF ANATOMY TULANE SCHOOL OF MEDICINE

Dr. James A. Miller, Jr., has been appointed professor and chairman of the department of anatomy at Tulane school of medicine, it was announced by Dr. M. E. Lapham, acting president of Tulane university.

Dr. Miller assumes the post formerly held by Dr. Harold Cummins who reached the age of retirement a year ago. During the past year a committee of three senior members of the department of anatomy has acted as chairman. Dr. Cummins is now assistant dean in charge of admissions.

Dr. Miller has been professor of anatomy at Emory university since 1953, serving in this capacity in the division of basic sciences. Prior to that he was professor and chairman of the department of anatomy in the Emory school of dentistry.

Dr. Lapham said that Dr. Miller is a devoted teacher of students and has earned an international reputation for his research work. His

principal interests have centered in asphyxia, or shortage of oxygen, in newborn babies and the damage which results.

In 1957 he won a senior postdoctoral fellowship and worked for a year in England and Sweden. During this time he had opportunity to work with doctors in the successful application of his ideas for the treatment of asphyxia in newborns.

In much of his work he collaborated with his wife who also holds a Ph.D. degree. He is author of 60 articles in scholarly and scientific journals.

Dr. Miller was born in China of missionary parents and attended the College of Wooster in Ohio, where he graduated in 1928. He holds the Ph.D. degree in zoology from the University of Chicago. He subsequently served on the faculties of Ohio University, the University of Michigan and the University of Tennessee. He has been at Emory since 1946.

Dr. and Mrs. Miller were awarded the Research prize for 1959 of the Association of Southeastern Biologists for their joint paper on factors contributing to the successful reanimation of mice cooled to less than one degree Centigrade.

In December of 1959, Dr. and Mrs. Miller received the Annual Research Citation of the Emory Chapter of Sigma Xi in recognition of outstanding research on asphyxia of the newborn.

USE OF FEMALE HORMONE FEASIBLE FOR MEN

The long-term therapeutic use of female hormones in men has been found to be "entirely feasible," according to a report in the Sept. 17 Journal of the American Medical Association.

The effects of female hormones (estrogens) prescribed for men recovering from heart attacks were reported by Drs. Jessie Marmorston, Oscar Magdison, Oliver Kuzma and Frederick J. Moore, Los Angeles.

All of the patients had suffered heart attacks (myocardial infarctions) as a result of hardening of the coronary arteries that surround the heart. A high content of fats in the blood is believed to be involved in the development of hardening of the arteries. Estrogens were administered to patients to reduce their elevated blood fat levels.

The authors said the ability of estrogens to reduce fats in the blood is "well established" but their use has been limited in men because they can cause feminization.

However, they said, "our findings indicate clearly that the long-term investigative administration of small to moderate doses of estrogen to men with myocardial infarction is entirely feasible."

The findings were based on a study of 109 men, ranging from 35 to 83 years of age, who were treated with estrogens for a total of more than 900 months.

Each patient was started on a small dose which was increased little by little over a considerable period of time.

"With this gradual approach to tolerance, clinical side-effects have been observed in most patients at some time in the course of therapy but have presented no obstacle to continuation of therapy," the physicians said.

The first manifestation in almost every case was pain or tenderness of the breast, they said. Of 44 patients available for observation for some months after this symptom appeared, they said, 15 tolerated the same dosage thereafter and 17 tolerated an even greater dosage whereas in only 12 was it necessary to reduce the dosage.

INTERIM SESSION AMERICAN COLLEGE OF CHEST PHYSICIANS

Washington, D. C., November 26-28, 1960

The American College of Chest Physicians will hold its Annual Interim Session at the Shoreham Hotel in Washington, D. C. The scientific sessions will be held on Saturday and Sunday, November 26 and 27. Monday, November 28, will be reserved for administrative sessions. Dr. M. Jay Flipse, Miami, Florida, President of the College, will preside.

Dr. Joseph W. Peabody, Jr., Washington, D. C., and his committee, have arranged a scientific program of exceptional interest including Symposia on Congenital Bronchopulmonary Disorders, The Role of Steroid Therapy in Chest Diseases, and Current Therapeutic Issues.

A highlight of the program will be the Fireside Conferences on Sunday evening, November 27. In addition, there will be three round table luncheon discussions on both Saturday and on Sunday. These will feature prominent speakers discussing various aspects of heart and lung diseases.

AMERICAN RHEUMATISM ASSOCIATION MEETING IN DALLAS

The Seventh Interim Scientific Session of the American Rheumatism Association will be held all day Friday and Saturday morning, December 9 and 10, 1960, at the Sheraton Dallas Hotel in Dallas, Texas.

During the Saturday morning session, the ARA members will be joined by the members of the Texas Academy of Internal Medicine and by the members of the Texas Rheumatism Association. There is no registration fee. Printed programs will be available at the meeting or two weeks before the meeting by writing to the Executive Secretary, American Rheumatism Association, 10 Columbus Circle, New York 19, N. Y.

Current plans provide for a panel discussion on "Lupus Nephritis", with participation by a nationally known pathologist, electronmicroscopist and several clinicians. The panelists will discuss the clinical and pathological picture of this lesion and its course on steroid therapy.

Chairman of the Program Committee is Dr. Morris Ziff, Southwestern Medical School University of Texas; Chairman of the Local Arrangements Committee is Dr. Howard C. Coggeshall, both of Dallas.

EXTRA CHROMOSOME FOUND IN MENTAL RETARDATION CASE

Forty-seven chromosomes, one more than normal, have been found in a mentally-retarded 21-year-old woman with minor congenital abnormalities, researchers at the Roswell Park Memorial Institute, Buffalo, N. Y., reported.

The report in the Sept. 17 Journal of the American Medical Association was the first description of the finding of an extra chromosome among the six largest chromosomes.

The authors are Avery A. Sandberg, M. D., Lois H. Crosswhite, B.A., and Edwin Gordy, M. D.

Each normal human being has 46 chromosomes, 22 pairs of autosomes and two sex chromosomes (XX in the female, XY in the male). Half of the chromosomes come from the mother and half from the father at the time of conception. Chromosomes, located in the nucleus of the cell, contain genes which determine hereditary traits.

There have been previous reports of an extra chromosome among the smallest chromosomes in persons with mongolism, a specific type of mental retardation, and of an extra chromosome of medium size in children with congenital defects.

DR. NICE APPOINTED CHAIRMAN DEPARTMENT OF RADIOLOGY TULANE SCHOOL OF MEDICINE

Dr. Charles M. Nice, Jr., professor of radiology at Tulane school of medicine has been appointed to chairman of the newly created department of radiology. Radiology has been a division within the department of medicine and Dr. Nice has headed the division for the past two years. The creation of the new department was recommended by a committee headed by Dr. George E. Burch, professor and chairman of the department of medicine and was prompted by the importance of radiology in the medical curriculum as well as the competent work done by Dr. Nice. A new full-time assistant professor, Dr. Joseph L. Izenstark, has been added to the radiology faculty. The departmental status of radiology will aid further recruitment to the full time faculty and permit expansion of the teaching and research work.

Dr. Nice is a native of Parsons, Kansas. He received his degree in medicine in 1943 from the University of Kansas, his master of science degree in 1948 from the University of Colorado, and his doctorate in 1951 at the University of Minnesota. He joined the Tulane faculty in 1958.

KIDNEY SUBSTANCE LINKED TO HIGH BLOOD PRESSURE

New evidence has been found implicating the kidneys in the development of high blood pressure.

A recent study shows that a substance released by the kidneys, angiotensin, produced significant increases in the secretion of aldosterone, a hormone found in excess in cases of malignant hypertension.

Angiotensin is liberated as a result of altered blood circulation or a deficiency of blood in the kidney. Aldosterone is produced by the adrenal glands, which lie adjacent to the kidneys. The hormone accelerates kidney retention of sodium chloride, or salt, and elimination of potassium.

The studies were reported by Dr. John H. Laragh, department of medicine, Columbia University College of Physicians and Surgeons, New York City, in two articles in the Sept. 17 Journal of the American Medical Association.

Angiotensin, like norepinephrine and epinephrine also produced by the adrenal glands, tends to increase blood pressure. Dr. Laragh compared the effects of angiotensin with the other two substances.

Unlike norepinephrine and epinephrine, which had varying effects, he said, "infusion of angiotensin in seven subjects produced an increase in the aldosterone secretory rate in every experiment."

Angiotensin is released by an enzyme, termed renin, found in the blood-deficient kidney, Dr. Laragh explained. Aldosterone, by causing sodium retention, might tend to improve the kidney circulation leading in turn to suppression of the enzyme, he said.

"More work must be done, but it now seems that the approach to malignant hypertension should be aimed at measures to define and to correct abnormalities in the renal [kidney] circulation," he said. "Included in the therapeutic approach may be the feeding of added sodium chloride in an attempt to improve the renal circulation, rather than its deprivation, as has been popular heretofore."

Co-authors of one of Dr. Laragh's reports are Marielena Angers, M. D., William G. Kelly, Ph.D., and Seymour Lieberman, Ph.D., all of New York City.

BOOK REVIEWS

Metabolic Care of the Surgical Patient; by Francis D. Moore, Philadelphia, Pennsylvania, 1959, pp. 1011. Price $20.00.

This book is the most comprehensive work written on the field of metabolic aspects of surgical disease. The author has organized a vast amount of material in a concise fashion and has made a complex field both comprehensible and interesting. The literary style is pleasant and polished, and the graphic illustrations, which appear cumbersome at first glance, are probably as simple as possible in this particular field.

This book is the definitive work in the rather new field of surgical metabolism. It should be in the library of every surgeon.

KEITH REEMTSMA, M. D.

The Surgical Treatment of Scoliosis; by Dr. Louis A. Goldstein, Charles C Thomas, Springfield, Illinois, 1959, pp. 116, $6.75.

This book fulfills a need for those who deal with the complicated problem of scoliosis. It is the result of community cooperation among orthopedic surgeons in the vicinity of Rochester, New York, because only by such an effort could sufficient cases be corralled for studies such as Dr. Goldstein has made.

The present and past thinking on both the conservative and surgical treatment of scoliosis is presented. Techniques are well described, such as that of application of the turnbuckle cast and the actual carrying out of spinal fusion. The results of treatment are critically analyzed to let the orthopedic surgeon know what to expect in various types of curvatures. This monograph should be of much help to the orthopedic surgeon.

LYON K. LOOMIS, M. D.

Cardiac Auscultation; by J. Scott Butterworth, et al, 2d ed., New York, N. Y., Grune & Stratton, 1960, pp. 102, $6.25.

This book is an outgrowth of material used in postgraduate teaching of clinical auscultation of the heart. Because it is not intended as a comprehensive work, there are only brief discussions of physical principles involved in perception of heart sounds, in addition to the brief descriptions of auscultation of heart sounds and murmurs in normal and diseased states. Illustrations have been improved since the first edition by including ECG's or carotid pulse curves with stethograms.

The authors point out the usefulness of improved audio-visual techniques in learning auscultation. The reviewer, however, has the impression that the newer techniques have contributed principally by stimulating an interest in teaching the art. The equipment which is advertised may aid teaching by the simultaneous reception of visual patterns and appreciation of time relationships, but the method is a very poor substitute for bedside stethoscopic study and correlation with pathologic and surgical observations. The recording of sounds can be useful, as the authors indicate, to accumulate a number of observations for review in a short teaching period.

For the sake of brevity, clinical descriptions of associated cardiac findings are omitted. Unfortunately, auscultation loses its significance when divorced from clinical observations and interpretations. By being brief, the book fails to completely describe a number of interesting observations which can be made by auscultation. Such observations as the variations of auscultatory findings with combined congenital defects, changes of murmurs or sounds with phases of disease, and the mid-diastolic murmur with a dilated heart are inadequately considered. Beyond an outline for a course in auscultation of the heart, the lack of detail makes the book have a rather limited use.

GERALD S. BERENSON, M. D.

The Teen-Age Years; By Arthur Roth, Garden City, New York, Doubleday & Company, Inc., 1960, $3.95, pp. 288.

This book deals with the many problems of the teen-age group. The material has been written in simple language that enables any parent or layman to read it without any difficulty and enjoy its content. It gives the reader a correct attitude in the approach to the teen-age group and helps them to understand the different changes that take place just at that age.

The book is not only good for parents of teen-agers but also for the general practitioner and other physicians who will have to take care of teen-agers.

GABRIELA ORTEGA DE RUTTER, M. D.

PUBLICATIONS RECEIVED

Doubleday & Co., Inc., N. Y.: Sight. A Handbook for Laymen, by Roy O. Scholz, M. D.

Grune & Stratton, N. Y.: The Out-patient Treatment of Schizophrenia; A Symposium, edited by Sam C. Scher, and Howard R. Davis.

Landsberger Medical Books, Inc., N. Y.: The Role of the Physician in Environmental Pediatrics, by Carl C. Fischer, M. D.

J. B. Lippincott Co., Phila.: What Price Medical Care? A Preventive Prescription for Private Medicine, by Doctor the Rt. Hon. Sir Earle Page, with an introduction by E. A. van Steenwyk.

W. B. Saunders Co., Phila.: Outline of Pathology, by John H. Manhold, Jr., D.M.D., and Theodore E. Bolden, D.D.S.; Occupational Diseases and Industrial Medicine, by Rutherford T. Johnstone, M. D., and Seward E. Miller, M. D.

Taplinger Publishing Co., Inc., N. Y.: Adventure to Motherhood, by J. Allan Offen, M. D.